AMATEUR RADIO

MAY 1963

Vol. 31, No. 5

2/-

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1Q5	5/-	5 a £1	6C5	5/-	5 a £1	6V4	11/4		14A7	3/6	7 a £1	DL75	2/6	10 a £1	VR103	5/-	5 a £1
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2X2	5/-	5 a £1	6F8	5/-		7C5	5/-	5 a £1	35T	30/-		EF39	5/-	5 a £1	VT127	4/11	5 a £1
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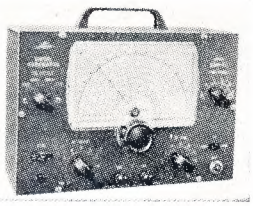
120 Kc.-390 Mc.



Freq. range (six bands): 120 Kc. to 130 Mc. on fundamentals; 120 to 390 Mc. on harmonics. Mod. freq. 400 and 1,000 c.p.s. Tubes: 12BH7, 6AR5. Rectifier: half wave selenium. Provision for crystal oscillator (xtal not supplied), 1 to 15 Mc. 100, 117 or 230v. a.c. input, 50/60 c.p.s. Size: 7½ x 10¾ x 4½ in. Weight: 6 lb.

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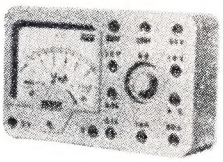

300 μA. movement.

AC and DC voltages: 0-10, 0-50, 0-250, 0-500, 0-1000v.

Current ranges (mA.) 0-1, 0-100, 0-500 mA.

Ohms range: 0-100,000 ohms.

Size: 3¾ x 2½ x 1¼ inches.

Complete with leads.

Price only £3/1/0, post paid.

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U.h.f. mixer, design freq. 3,060 Mc.

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Ceramic 9-pin Valve Sockets, **2/6 each**

EF50 Valve and Ceramic Socket **6/6**

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Editor:
K. M. COCKING VK3ZFQ

Publications Committee:
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R. S. Fisher VK3OM
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THE EDITOR,
"AMATEUR RADIO,"
P.O. BOX 36,
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★

Direct subscription rate is 24/- a year, post paid, in advance. Issued monthly on the first of the month, January edition excepted.

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OUR COVER

Good equipment is a pre-requisite. The cover photograph shows one corner of the Publications Committee tent wherein the Collins 75S-3 is being put to good use by the operator (VK3OM) in the 1963 N.F.D. Contest. Another scene from the other tent appears on page 16, which shows further gear being used.

FEDERAL COMMENT

★

P. R. I. N. T.

No one will deny that many amazing advances in communication techniques have been made in recent years, but most have not touched on that important commodity—band space. Single sideband transmissions by both Amateurs and Commercial stations will undoubtedly contribute to the conservation of frequencies, but even this type of emission has only touched on the fundamental problem. What is needed is a break-through in the conveying of intelligence from one place to another.

Is this a pipe dream or not? It might have been considered so, until just recently when a completely new concept was discovered and is believed to be in use for certain applications. This system still uses the electromagnetic spectrum but not in the manner we are in the habit of expecting. In fact, this system contemplates the reception of what we might term intelligent noise! To the normal communication receiver, this system appears to be only randomly scattered noise, and for that reason we have christened it P.R.I.N.T. or Pseudo Random Intelligent Noise Transmission.

To understand this new technique one must dissociate one's thinking in terms of frequencies and start thinking in terms of time. If one can imagine being able to see at the same time a wide portion of the electromagnetic spectrum as on a spectrum analyser, the transmission would appear to be a number of apparently randomly dispersed pulses of noise and would sound like it.

The system is not one that can really be simply described, but suffice it to say that a knowledge of information theory is essential. It does, however, use normal conventional transmitting components, and a system of modulation that can be allied to pulse code modulation. The major ingredients of the system are a "clock oscillator," a black box that produces a series of predetermined pulse codes, a fast acting electronic phase reversal switch and a means of modulating the system by injection at the oscillator. P.R.I.N.T. therefore uses an unusual type of modulation and a new concept in tuning—time instead of frequency. To receive intelligence from the transmission, the receiver "oscillator" must start at the same time as the transmission, must be in phase with it and "detect" the same pulse code system.

Due to these variables, many such systems using different codes and time starting points may be accommodated in the same spectrum space. As this system is still in its infancy, there are no "do-it-yourself" kits on the market; nevertheless, it does present a brighter picture for the future accommodation of many more stations and their operation without mutual interference. This system will offer a challenge to the serious experimenter for some years until we are able to apply p.s.i. communication on an on-off basis—did someone ask what p.s.i. communication is—well we are not telling now but reserving it for a future editorial!

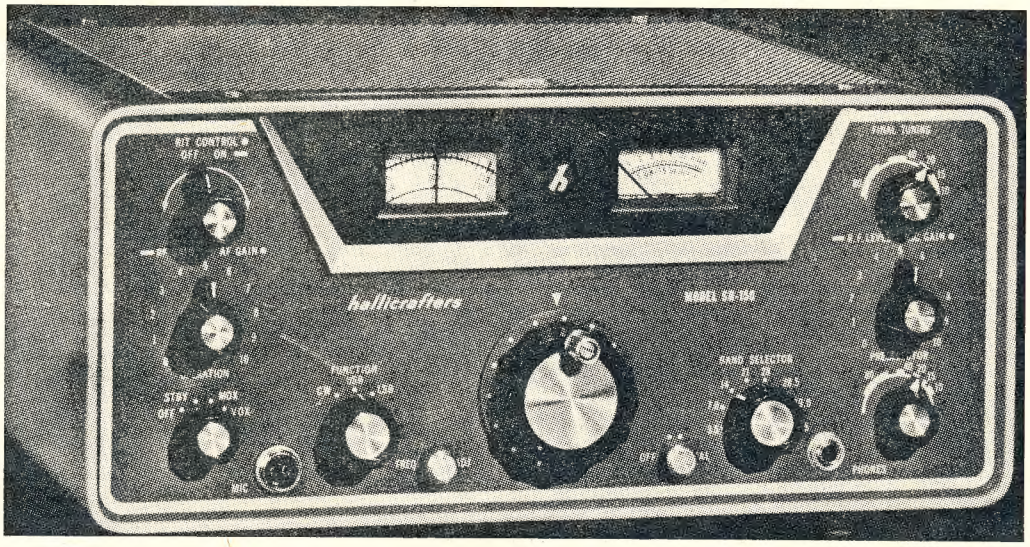
FEDERAL EXECUTIVE, W.I.A.

CONTENTS

A Linear Amplifier for 50 Mc. .. 3
Technical Correspondence: Clamp Tube Modulation 5
Field Day Power Distribution 6
A V.F.O. Adaptor for Geloso Signal Shifter 10
Semi-Automatic Beam Rotator 13
Modifications to "A 100 Watt P.E.P. Band-Switched Phasing S.S.B. Transmitter" 16
Sideband Topics:
Transistors and Mechanical Filters 9
A New Linear 9
Technical Advice 11
Hints and Kinks:
A Companion for the Like-New Mixer 15
Securing Miniature Valves 15
Keying Geloso V.f.o. 15
VK-ZL-Oceania DX Contest, '62, Results 17
Combined Figures-Letters 7
Federal and Divisional Monthly News Reports 23
Correspondence 19
DX 21
SWL 22
VHF 20
Youth Radio Clubs 22

SR-150 AMATEUR BAND FIXED/MOBILE TRANSCEIVER by . . .

HALLICRAFTERS



- Full Amateur Band coverage—80-10 metres.
- Receiver A.F. Gain and R.F. Gain Controls.
- S.S.B. operation—V.O.X. or P.T.T.; C.W. operation—manual or break-in.
- 1650 Kc. Crystal Filter.
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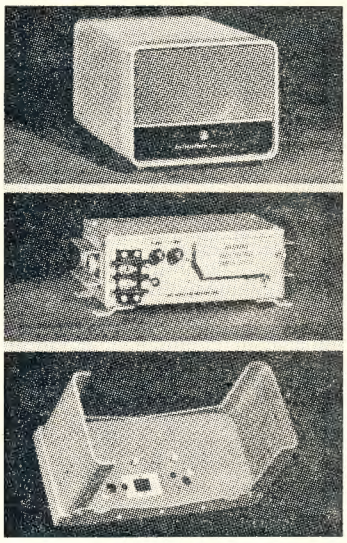
- A.A.L.C.—Hallicrafters' new, exclusive A.A.L.C. (Amplified Automatic Level Control).



SPECIFICATIONS

Frequency Coverage: Eight-band capability—full coverage provided for 80, 40, 20, 15 metres plus one segment of 10 metres (additional Crystals may be added). Available for operation on non-Amateur frequencies by special order.

Front Panel Controls: Tuning, Band Selector, Final Tuning, R.F. Level, Mic. Gain, Pre-Selector, R.I.T., Rec. I.F. Gain, A.F. Gain, Operation (Off/Standby/M.O.X./V.O.X.), Function (C.W./U.S.B./L.S.B.), Cal.

General: Dial cal., 5 Kc.; 100 Kc. Crystal cal., V.F.O. tunes 500 Kc., 18 tubes plus volt. reg., 10 diodes, one varicap. Rugged, light-weight aluminium construction (only 17½ lbs.); size: 6½" x 15" x 13".

Transmitter Section: Two 12DQ6B output tubes. Fixed, 50-ohm pi-network. Power input 150 watts P.E.P. S.S.B.; 125 watts C.W. Carrier and unwanted S.S.B. suppression 50 db.; distortion prod., 30 db. Audio: 400-2800 c.p.s. at 3 db.

Receiver Section: Sensitivity less than 1 μV. for 20 db. signal-to-noise ratio. Audio output 2 watts; overall gain, 1 μV. for ½ watt output. 6.0-6.5 1st I.F. (tunes with V.F.O.). 1650 Kc. 2nd I.F.

Price £560-0-0

A.C. OR D.C. POWER SUPPLIES

P-150 A.C. (top left): Styled to match SR-150 Transceiver. Five silicon diode rectifiers, 4" x 6". P.M. Speaker. 22 lb. Size: 6¼" x 7½" x 10".

P-150 D.C. (centre left): Five silicon diode rectifiers, four transistors. Weighs only 5½ lbs. Size: 3¾" x 10" x 6¼".

Complete Mobile Mount, MR-150 (bottom left): Adaptable to transmission hump or floor. Quick release design—all connections made simultaneously. Access holes for V.O.X. controls.

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A LINEAR AMPLIFIER FOR 50 Mc.

I. F. BERWICK, VK3ALZ*

THE availability of the QQE06/40 on the surplus market solved a problem for the writer—viz. a suitable tube for a QRO 50 Mc. linear. The QQE06/40 has rather attractive ratings in linear service, is efficient to 300 Mc., and has a reputation for linearity.

I decided to use a pair in push-pull parallel in order to have a conservative 150 watt linear. The results so far have been satisfactory.

It will be noted that a t.v.i. trap is fitted at the antenna terminal. An AB2 linear has a percentage of harmonic distortion which, though small, results in an appreciable amount of harmonic power being generated when the p.e.p. input is several hundred watts.

Other than this, no t.v.i precautions need ordinarily be taken.

All information relevant to the construction is given on the schematic.

Reference to the schematic shows that link neutralisation is used. In fact this is not neutralisation but negative feedback. There is a subtle difference.

The negative feedback r.f. amplifier is used extensively commercially in linear service. In my case it was the most convenient mechanically.

The bias is given as —28 v.d.c. Actually this should be capable of some variation to suit individual requirements. Some may prefer to run the amplifier more into AB1 or more into AB2. AB2 gives more output but the drive requirements are more stringent and harmonic distortion slightly greater. The bias supply should be completely free from ripple and of low impedance if AB2 operation is contemplated.

A small amount of grid swamping is used. The main load on the driver however is a 100 ohm resistor across the transmission line between driver and amplifier.

* 107 Loongara Avenue, Glenroy, Vic.

ADJUSTMENT

Grid-dip the grid and plate tanks. Apply drive and bias and peak the grid tuning. Reduce drive to a safe level, connect a load, apply screen and plate volts, tune plate to resonance, then to l.f. side of resonance. If t.p.t.g. oscillation occurs adjust position of neutralising coils until oscillation ceases. Use no more negative feedback than is necessary to ensure stable operation.

No trace of parasitics should be encountered if the suppressors, as described in the schematic, are fitted.

LINEARITY CHECKS

One should not imagine that the linear can be put on the air without proper linearity checks. As pointed out in my previous article, there are several types of oscilloscope display which can be used for linearity checks. It is not the purpose of the article to discuss these, which in any case are adequately covered in A.R.R.L. S.B. Handbook and other publications.

There should therefore be no great difficulty in satisfactorily completing the linearity checks provided (a) one has the necessary test equipment, and (b) the Handbook procedure is followed. As a matter of interest the writer is equipped to make on-the-air linearity checks provided a signal 20 db. above the noise can be supplied.

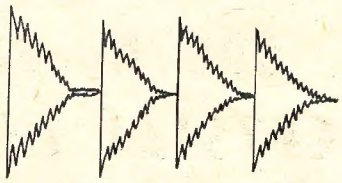
There is a vast difference in performance between a correctly adjusted linear and a maladjusted one, and this difference is reflected in the readability of the received signal.

Please Note: Calibrated screw-driver techniques are inapplicable in this application.

C.R.O. PATTERNS

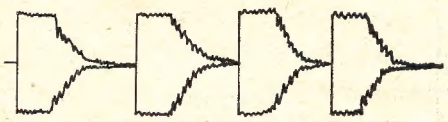
I conclude with some pretty pictures taken from the c.r.o. face, plus appropriate (I hope) comment.

Voice Waveforms—Envelope Display
30 c.p.s. Sweep Speed
Vowel Sound



Cool Man, Cool!

Peaks sharp and clean, correct triangular pattern, freedom from harmonics of voice frequencies. Signal normally copyable down to S3.



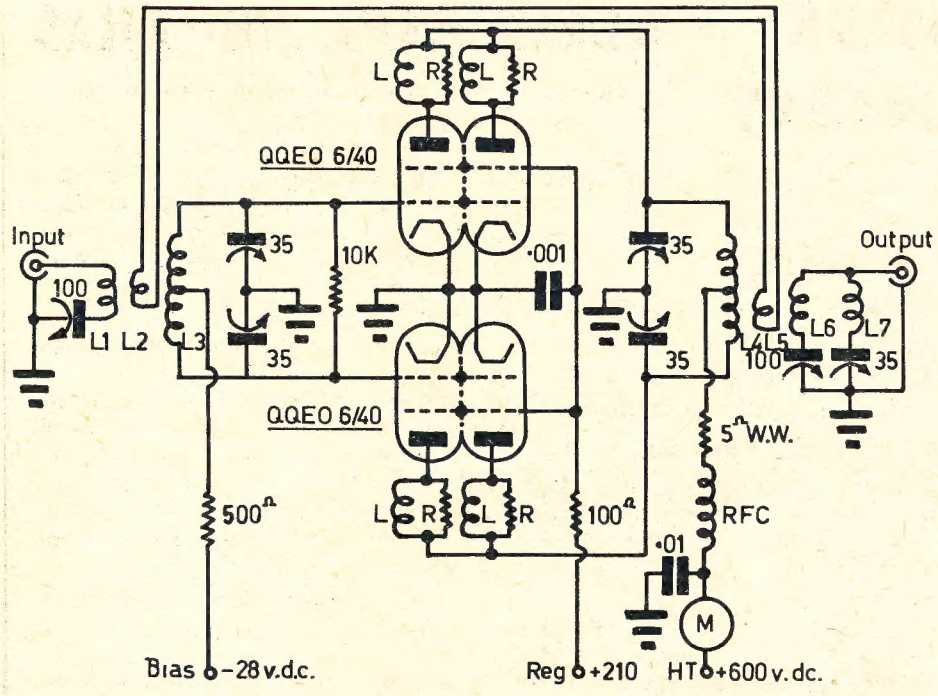
Plenty of Sidebands here—
too many in fact!

Peak flattening due to overdrive, incorrect load, insufficient bias, or combinations of same—splatter!!

Old gravel voice!

Distortion due to too much bias—spurious peaks indicating harmonics of voice frequencies.

(Continued on Page 19)



Schematic of Linear Amplifier for 50 Mc.

L—6 turns 22 B. & S. enamel wire wound on "R"—a 47 ohm resistor.
R—47 ohm ½ watt and 22 ohm ½ watt in parallel.
L1—2 turns 16 B. & S. enamel, ¾ inch diam.
L2—1 turn link coil.
L3—6 turns 10 B. & S. enamel.
L4—6 turns ⅛ inch copper, 1 inch diam.
L5—1 turn link coil.
L6—2 turns 14 B. & S. enamel, ¾ inch diam.
L7—Trap coil to resonate with local t.v. station which is in harmonic relationship to 50 Mc., approx. 200 Mc.
M—500 mA. meter.

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FREE! Eight-page illustrated Catalogue, containing technical data, graphs and charts how to design the correct pi-coupler for your transmitter, are available on request.

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Full Price £6/3/0 including Sales Tax

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CLAMP TUBE MODULATION

Dear Sir,

I refer to the article on "Clamp Tube Modulation" by VK4MX in the January issue. It is not that I wish to offer criticism, in fact it would be difficult to do so with the number of assumptions and provisos made, but I do think C.P. has an odd point of view about the subject and has not really hit the nail on the head. I have used a similar system of modulation for a couple of years now and probably get results similar to VK4MX; this is what it amounts to.

Take an ordinary c.w. rigged p.a. and cut the drive. If this is the only source of bias, what happens: the p.a. tube probably burns up. The simplest way to prevent this happening is to insert a clamp tube.

Then one bright Sunday morning you get fed up with the old key and want to have a rag chew. No audio power amp. or mod. tranny or anything big, so you start thinking about the clamp tube (after all, it is already switching the p.a. current from some very low value to its peak value). Just remove the grid circuit of the clamp tube (it was biased from the p.a. grid circuit, wasn't it?) and arrange for class A operation (you don't want to distort the audio do you?).

Having connected the audio in to the clamp tube grid under class A conditions, you then fiddle the clamp's plate resistor (which is also the p.a's. screen dropper) for linear modulation. This is very easy to achieve by plotting the r.f. output against the screen voltage on the c.r.o. and a perfect trapezium is easily obtained.

Whether or not the p.a. screen voltage you finish up with has a mean value of half what it was before you started on this lark depends entirely on just what tube you've got for a p.a. (we do want linear modulation, do we not?), and you'll be surprised just how low the power input to the p.a. can become with some p.a. tubes before linear modulation is achieved.

Anyway, start hollowing into the mike and you're on the air with good modulation and efficiencies like VK4MX mentions. Unfortunately, if you are still with me, all you have got so far is screen modulation—not clamp. Now this is the good oil and also where the name is derived.

Before you got ambitious phonewise, you had a clamp tube (controlling the p.a. output) which functioned in response to the presence or absence of drive bias and did nothing more than cut your p.a. tube expenditure. Now if you wish to conserve power when you're not nagging into the mike, as is often the case with mobile operation, why not control the mean carrier amplitude with the audio in the same manner as r.f. at the p.a. grid originally controlled it during key up conditions.

In this case you simply discard whatever bias arrangement you had through listening to me and slap a 0.01 μF. and 10 meg. in the clamp grid circuit and produce "leaky grid" bias as do a few commercial radio manufacturers in their audio stages for simplicity and cheapness. All that happens then is this:

No speak—no bias—large clamp current—low p.a. screen volts—low output. (By the way, it's not all hay; you're wasting power in the screen resistor and clamp tube—how much depends on what the p.a. tube is.)

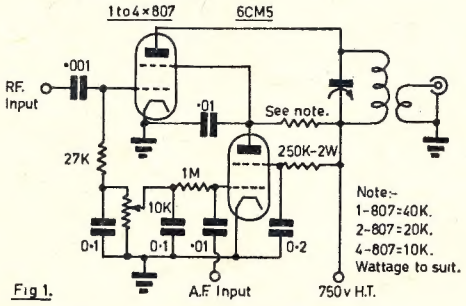


Fig 1.

Now speak—the audio is amplified—modulates the p.a. at the same time bias is developed at the clamp grid which reduces the average clamp current and naturally allows the p.a. screen to rise (still with the audio superimposed on it) and up goes the output. Depending on your choice of tubes, it is very easy to overmodulate the p.a. Admittedly it is impossible to exceed the power you radiated under c.w. conditions, but it is a simple matter to break the carrier at modulation troughs.

In fact this is usually the case with the arrangement described because after all, since rectification takes place at the clamp grid the positive-going peaks of audio are flattened there and appear the other way up at the p.a. screen, so every time you open your mouth, especially with words like "syllabiv", a whole shower of flattened carrier troughs go off into space. Still, with a bit of care in design, nobody seems to catch on that you are using clamp tube modulation although when you tell them it always seems that they knew all the time. They'd noticed that splutchiness or their S meter was kicking upwards a bit too energetically.

Anyway, that's clamp modulation, just a form of screen modulation plus a bit of carrier lift or controlled carrier if you like. Personally I like it, after all if you're got good carrier control, the bloke at the other end will probably be able to hear what's going on underneath you as you pause to mouth a few choice but unspoken words at some poor but less skilled fellow motorist if you happen to be mobile.

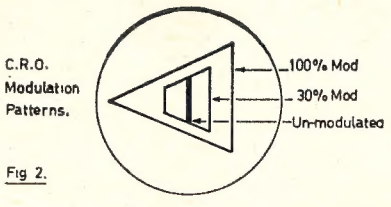


Fig 2.

Also, if he (the other Ham—not the motorist) has the usual diode detector circuit in his receiver (where the following valve's grid resistor is twice the value of the diode load) he will appreciate your audio belting in from nil carrier level. He gets no audio below 30% of negative modulation peaks from any 100% modulated carrier of steady mean value at any time, which is why there always seems to be a lot of audio when clamp transmissions are received, but that's a long and involved theory of my own that no one has yet bought into, so I won't digress at this point.

But what about these nasty little distorted peaks? Can the circuit be modified so that the audio lifts the carrier without this type of distortion and yet remain truly clamp modulation in every sense of the word? I refer to the circuit (Fig. 1) in which I think I have found the solution.

Most of the details of operation have been discussed, so I will carry on with an explanation of the new features. You will notice that the clamp bias is derived from the p.a. grid current and that a pentode is used to clamp the p.a. screen. The clamp grid never draws current, thus the undesirable clipping of positive-going peaks is avoided.

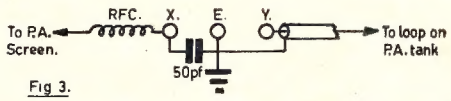


Fig 3.

Carrier lift is brought about by the slight increase in clamp screen current when audio is applied to its grid because this results in a comparatively large drop in clamp screen voltage. (I say comparatively because it is already quite low—the 6CM5 needs very little screen voltage to get it percolating.) This in turn causes the clamp plate current to fall, the plate and, of course, the p.a. screen voltage rises and up goes the carrier output with audio superimposed.

The point of operation (or degree of lift and linearity) is adjusted by the 10K pot. and the c.r.o. trapezium will indicate excellent linearity (if the p.a. tank is fully loaded—very important) and as the amount of audio is increased the trapezium not only projects to a triangle but "blows up" or "blooms" in the process, rather like a t.v. picture tube when the 1S2 is faulty, which indicates of course a carrier lift.

I usually tune my rig (4 x 807) under c.w. conditions by turning the bias knob to full bias and then readjust this clamp bias for operation, i.e. 200 mA. at 750 volts, then bias back to 50 mA. At zero modualtion the aerial current is approx. 400 mA. and at full modulation just over 600 mA. into 300 ohm ribbon. Assuming an s.w.r. of 1, which is unlikely, this represents an increase of mean carrier from 48 watts to 108 watts.

(Continued on Page 7)

Field Day Power Distribution*

Simple Control Centre for Multiple Installations

THEODORE J. JONES, W3CHU

● This well-thought-out Field Day power distribution centre not only speeds up installation, but also concentrates fusing and line-voltage monitoring at one spot, making it unnecessary to search far in case of a power failure. The principle applied here to distribute power from two generators may be extended as required.

AS a result of previous experience in supplying power to each of several rigs during Field Day activities, the need for a safe, convenient and reliable power distribution system became apparent to the members of the Chester County (Penna.) Amateur Radio Club. The gear illustrated in the accompanying photograph and sketches, which was subsequently designed and built as a club project, well proved its worth in our last Field Day expedition.

The objectives sought in the design and layout of the unit were reduction of generator hash, a common electrical ground system for all equipment, and the elimination of power interruptions caused by cable connections working loose. In addition, the need for cables of adequate length, common polarisation, monitoring of line voltages, and proper fusing for overload protection was taken into account. The consideration of these factors led to a practical and easily built piece of equipment which has proved to be a welcome asset to our club's Field Day equipment.

DISTRIBUTION CIRCUIT

Fig. 1 shows the wiring diagram of the distribution unit. Provision is made for the convenient distribution of the outputs of two portable gas-driven generators. A $2\frac{1}{2}$ kilovolt-ampere (k.v.a.) generator feeds into J1 from where it is distributed through three outlets, J3, J4 and J5. Similarly, a $1\frac{1}{2}$ k.v.a. unit feeds in at J2 and is distributed from two outlets, J6 and J7.

Throughout the distribution system three-contact twist-lock plugs and receptacles are used for making connections. These connectors not only provide the required mechanical security but the third contact makes it possible to maintain automatically a common ground connection.

Each generator output passes through a line filter to reduce generator commutator interference, and thence to a red lamp which provides a visual indication of whether or not generator output is being received at the unit. A d.p.d.t. switch connects the generator output to the distribution outlets which are individually fused in one side of the line, a common fuse being used in the other side of the line. Generator output voltage is monitored by a voltmeter. The common ground connection is brought out to a heavy terminal fitted with flat washers and a wing nut. In use, this terminal is connected to a metal rod driven into the ground, or other convenient ground connection.

CONSTRUCTION

The cabinet shown in the photograph is made of $\frac{3}{8}$" plywood. It is 24" wide, 12" deep and 16" high, and is fitted with a sloping upper panel and a vertical lower panel, both of which should be made of $\frac{1}{4}$" Formica or other insulating material. The recessed male input connectors, J1 and J2, are mounted one on each side of the cabinet near the top. The five female output connectors are mounted in a row on the lower vertical panel, divided into groups corresponding to the two generator outputs. Meters, control switches, pilot lamps and fuses are similarly grouped above on the sloping panel. The fuse holders are of the "indicating" type which makes it easy to spot a blown fuse.

Mounting feet are provided to keep the cabinet off the ground if other means are not available, and handles on each side facilitate carrying. Flush-folding handles leave no projections when not in use.

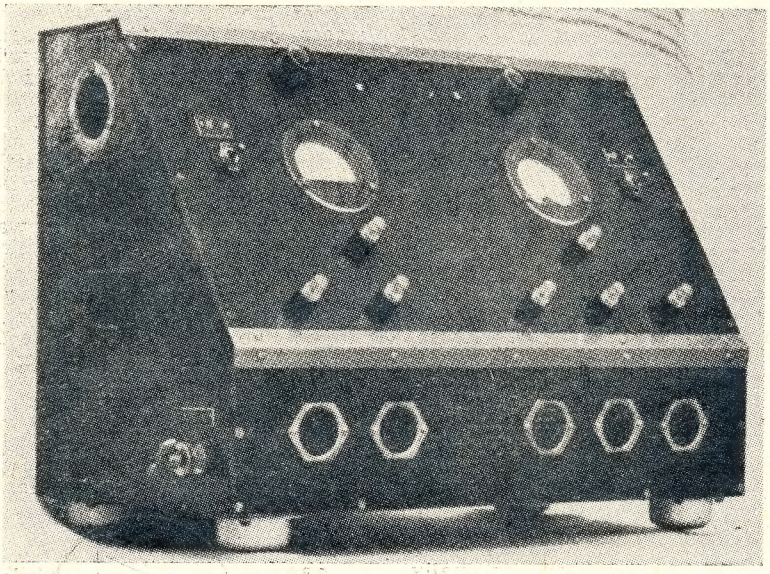
CABLES

Interconnecting cables are made of three-conductor underground-type plastic-covered electrical cable. This cable consists of two No. 10 wires for the electrical load, and one No. 14 wire used for the common ground connection. (This cable is often referred to as two-conductor No. 10 cable with ground wire.) The plastic covering of this cable is tough and durable. The two generator cables are identical and are each 10 feet long.

If feasible, a three-contact female twist-lock receptacle should be mounted on the generator base or frame and the generator output termination (whatever type it may be) wired to the twist-lock receptacle. The ground terminal of the receptacle should be connected to the generator frame. In this case the input end of the cable will be fitted with a mating twist-lock plug.

If there is some reason why this adaptor arrangement cannot be installed, the input end of the generator cable should be fitted with a connector or other device matching the generator output termination. The output end of each generator cable should be fitted with a female twist-lock plug to fit the male input connectors of the distribution unit.

The five distribution cables are also identical. Each is 100 feet long, fitted with a male twist-lock connector at the input end, and a metal multiple outlet box at the output end, as shown in Fig. 2. Four receptacle



Chester County's Field Day power-distribution panel. Power from a 1½ k.v.a. generator fed in at the connector at upper left is distributed to equipment cables plugged into the two connectors at lower left. Above, on the left-hand side of the sloping panel, are a red indicator lamp, line switch, line voltmeter, and indicating-type fuse holders. A similar arrangement with three outlets on the right-hand side, distributes the power from a 2½ k.v.a. generator. Ground connection is made at the wing-nut terminal, lower left.

* Reprinted from "QST," April, 1962.

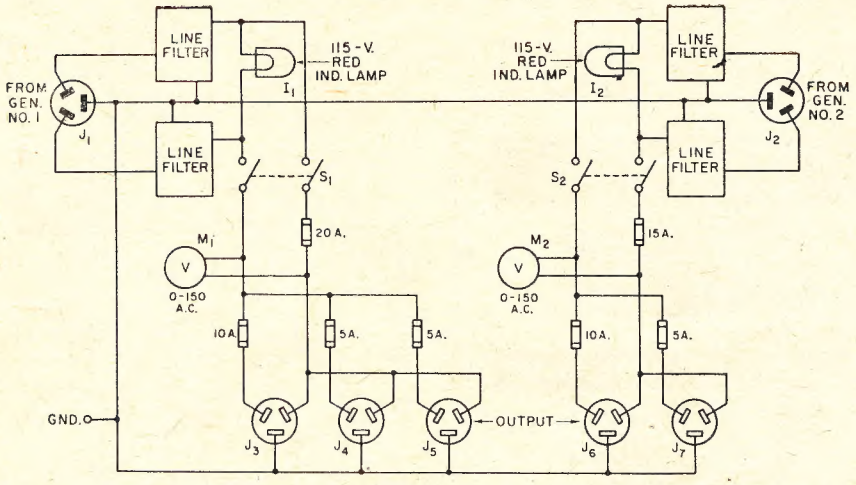


Fig. 1.—Wiring diagram of the distribution unit.

I1, I2—115 volt panel lamp, red.

J1, J2—Recessed male three-terminal twist-lock cable connector.

J3-J7 inc.—Flush-mounting female three-terminal twist-lock receptacle.

M1, M2—0-150 volt 60 cycle a.c. voltmeter.

S1, S2—20 amp. d.p.s.t. toggle switch.

Line filters are pi-network type rated at 115/230 volts, 25 amperes.

Fuse holders are indicating type.

boxes are standard items in electrical supply stores, and require only the addition of the wing nut. Any unused holes should be plugged with caulking compound to exclude rain. The receptacles are of the two-contact type to match the standard a.c. plugs of equipment and appliances. (In Australia we standardise on three-pin plugs and sockets and it is recommended that it be used to match your gear.—Editor "A.R.") The ground terminals of all equipment operating from any one distributing line should be connected together and then to the wing nut ground terminal on the outlet box. The ground wire of the cable is secured internally to the box, and the box should be grounded by a No. 10 wire from the wing nut to a metal rod driven into the earth.

The common ground system, elimination of all exposed hot terminals, weatherproof cables and adequate fusing have proved their worth in reducing electrical hazard to a minimum. The twist-lock connectors help to make the system mechanically foolproof, and identical cables avoid the confusion that often reigns at a Field Day set-up. It is not necessary to hunt for the right cable length with the right terminations, and the maximum permissible distance between control centre and equipment is known in advance.

The Chester County Radio Club is proud of this small contribution to the fun and safety of Field Day exercises, and passes this along to others who may be interested in constructing similar gear for their own activities. ●

★

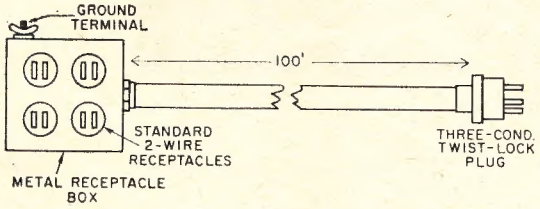


Fig. 2.—Sketch showing make-up of distributing cables. Input end terminates in a three-contact twist-lock male plug. Output end terminates in a metal box fitted with a wing-nut ground terminal and the desired grouping of standard two-contact a.c. outlets for equipment. (In VK standardise on three-pin outlets.)

★

CLAMP TUBE MODULATION

(Continued from Page 5)

It is a very handy system for local rag chews, you can bias back to about 10 watts, throw the mike in one corner, carry on with the new project—whatever it is—and chat merrily away at low power. Don't forget the audio gain must be reduced as the carrier is wound back!

In conclusion, I would comment that no Heising type dropper and by-pass are found necessary between the clamp plate and p.a. screen using the tubes indicated; not that the carrier is completely suppressed during negative peaks, but nearly so, particularly when compared to the peak carrier value due to the lift during modulation.

The rise and fall or "sliding action" of the clamp tube screen has an optimum time constant using the 0.2 μF. capacitor indicated, larger values do not affect the rise time very much, but cause the carrier to fall too slowly when not speaking, i.e. 0.2 μF. discharges through the valve (fairly low impedance) but has to charge up through 250K (do not alter).

A 12AX7 microphone amp. gives ample audio gain using a crystal microphone.

—Don Law, VK2AIL.

COMBINED FIGURES-LETTERS

In view of the appearance of new "figures-letters" prefixes on the Ham bands from time to time, hereunder is a complete authorised list. Many of these prefixes are already in use, but a majority have still to be implemented.

It is hoped that this list will save a lot of queries and enlighten many Amateurs what to expect in the future.

3A—Monaco	5W—Samoa (American)
3B, 3C, 3D, 3E, 3F—Canada	5X—Uganda
3G—Chile	6A, 6B—U.A.R. (Egypt)
3H to 3U—China	6C—U.A.R. (Syria)
3V—Tunisia	6D to 6J—Mexico
3W—Vietnam	6K to 6N—Korean Republic
3X—Repub. of Guinea	6O—Italian Somaliland
3Y—Norway	6P to 6S—Pakistan
3Z—Poland	6T, 6U—Republic of Sudan
4A, 4B, 4C—Mexico	6V, 6W—Republic of Senegal
4D to 4I—Philippines	6X—Malagasy
4J, 4K, 4L—U.S.S.R.	7A to 7I—Indonesia
4M—Venezuela	7J to 7N—Japan
4N, 4O—Yugoslavia	7S—Sweden
4P, 4S—Ceylon	7Z—Saudi Arabia
4T—Peru	8A to 8I—Indonesia
4U—U.N.	8J to 8N—Japan
4V—Haiti	8S—Sweden
4W—Yemen	8T to 8Y—India
4X—Israel	8Z—Saudi Arabia
4Y—I.C.A.O.*	9A—San Marino
4Z—Israel	9B to 9D—Iran
5A—Libya	9E to 9F—Ethiopia
5B—Cyprus	9G—Ghana
5C to 5G—Morocco	9K—Kuwait
5H, 5I—Tanganyika	9L—Sierra Leone
5J, 5K—Colombia	9M—Malaya
5L, 5M—Liberia	9O to 9T—Congo Repub.
5P, 5Q—Denmark	
5R, 5S—Malagasy	
5T—Mauretania	
5U—Niger	
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—Compiled by Eric Trebilcock, WIA-L3042.

* International Civil Aviation Organisation, H.Q. in Montreal, Canada.

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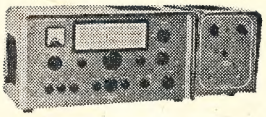

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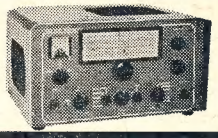

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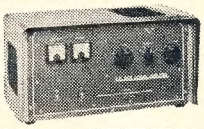

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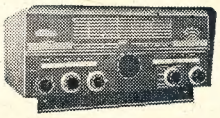

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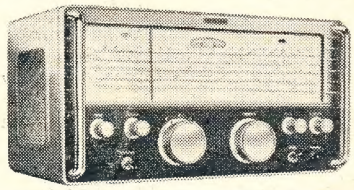

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SIDEBAND TOPICS—*BUD POUNSETT,* VK2AQJ*

TRANSISTORS AND MECHANICAL FILTERS

Only a couple of years ago, the Australian Amateur who was fortunate enough to possess a mechanical filter was the object of envy to his colleagues. He was either a wealthy man or single, or had a good friend in the United States. Today mechanical filters are readily available in this country from several sources.

Transistors are also here to stay. They represent one of the most dramatic recent developments in electronic history. It is only natural that mechanical filters and transistors be combined to produce the modern method of radio telephone transmission—Single Sideband.

One of the features of transistor usage is the large reduction in heat in the equipment and the resulting decrease in power consumption. Power supply commitments are minimised with a considerable saving in weight and space. These alone are of prime importance in portable/mobile equipment.

The mechanical filter gives you, in a very small package, almost the ultimate in bandpass filters. Of course, the old saying about not getting something for nothing applies here. The mechanical filter is an expensive device but its cost can be halved by using the one filter for both transmission and reception. You have no doubt noticed the fast accelerating trend toward transceivers in commercial Amateur equipment and several Australian Amateurs have already built transceivers for themselves.

Fig. 1 shows the marriage of the Collins filter with transistors. This forms part of a circuit of a 7 Mc. transmitter in the Collins Radio Company Bulletin 1031. This publication has a great deal of information on mechanical filters of various sizes, shapes and bandwidths packed into its twenty or so pages. It is available from the Collins Radio Company office in Melbourne.

Here are some interesting comments of a very practical nature which are quoted from Bulletin 1031. A study of the input and output circuit of the filter will illustrate the next paragraph.

"The small size and high performance characteristics of mechanical filters make them a natural choice when designing bandpass circuits using transistor amplifiers. The filters can be readily matched into the low-resistance circuits (1,000 ohms or less) encountered with transistors by using a series resonant termination.

"The lowest value of impedance that can be matched is determined by the extent to which the stray capacity across the filter can be minimised. This impedance will be in the order of magnitude normally encountered with grounded emitter amplifiers.

"In some applications, such as balanced modulators, it is desirable to terminate the filter into a balanced load. For this reason, each set of terminals on the filter is balanced to ground, eliminating the need for isolation transformers or amplifiers in circuits of this type.

"When mechanical filters are used in bandpass circuits, there are a number of precautions that must be taken if full advantage is to be derived from its steep skirt rejection capabilities. For example, the use of short wires between the filter terminals and the termination circuitry; effective shielding between the input and output, and the use of a common ground for the filter input, shield and output. These precautions prevent the input signal from partially bypassing the filter through inductive or capacitive coupling or ground loops."

Grateful acknowledgments go to Reg Tutton, VK3SF, and to the Collins Radio Company.

* 7 Thorpe Ave., Queanbeyan, 4S, N.S.W.

A NEW LINEAR

Vic Kitney, VK6VK, of Perth, has been active on s.s.b. for many years and in that time has spent long hours in experimenting with various aspects of both transmitting and receiving sideband. Vic has been "playing around with" (to use his own words) this variation of an 813 linear amplifier. The design is the same as the one we are all familiar with, except for the method of regulating the screen voltage. This has presented a problem in the past, but this novel approach works well indeed. I can vouch for the quality of the signal, having heard it on 20 mx.

The screen current swings from about 1 mA. to nearly 30 mA., so the regulator tubes are very pretty to watch under voice modulation conditions!

A word of warning here. If light loading is used to couple the output to the antenna, high screen current will be encountered and this will be

(Continued on Page 11)

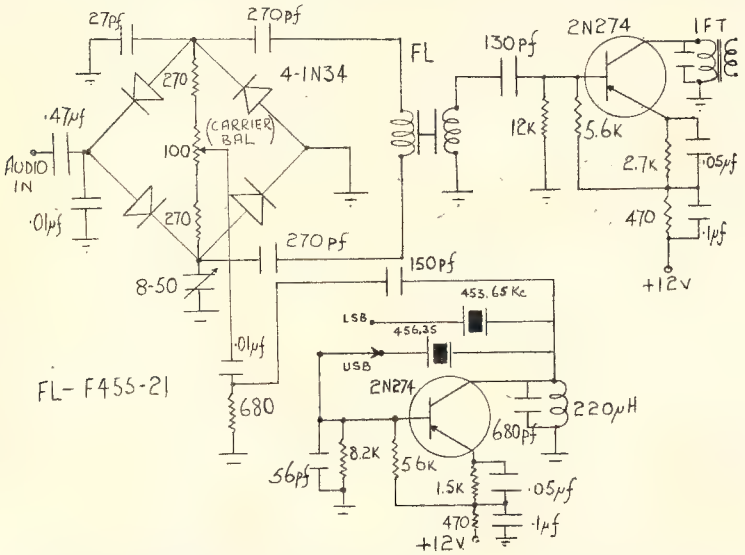

Fig. 1 (left).—The modern approach to filter exciters.

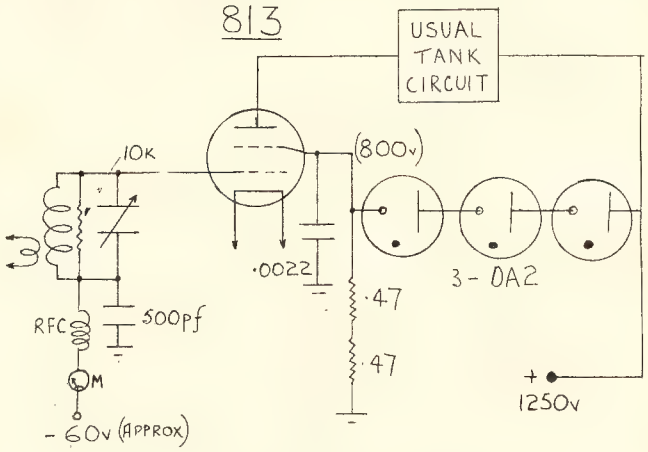

Fig. 2.—VK6VK Linear Amplifier.

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A V.F.O. Adaptor for Geloso Signal Shifters*

BERT SHUTTLEWORTH, ZL4IO

MANY Amateurs have found trouble in the oscillator section of the older (3-tube) type of Geloso signal shifter. There appears to be numerous complaints, some of the common ones being a sudden frequency jump of about 10 to 20 Kc. for no easily discerned reason, insufficient stability for use with an s.s.b. adaptor like the SB-10, poor calibration and reset accuracy, mechanical instability in that one only needs to touch the bandswitch knob on some of the older well-used models and the frequency shifts, and breakdowns in the three-gang tuning capacitor itself.

These v.f.o. units were built to a price, of course, and large numbers have taken advantage of them. It is likely that as so many people have built really fine transmitters around a Geloso, they are loth to break them up. It should be realised that the foregoing is not a slight on the designer of the units. In fact he did a darned good job and filled a gap where there was a big demand.

This adaptor was built to effect a cure of two of the faults mentioned, and to avoid breaking up an existing rig, as well as to try out a few ideas. Since the troubles occurred only in the oscillator section, what was wanted was a device which would simply take the place of the 6J5G tube. One pulls out the tube and plugs in the adaptor, no modifications to the Geloso being necessary.

A few observations about the design of an oscillator concerning stability may be in order. The popular scheme is to use a tube with a high Gm very lightly coupled to a tank circuit, with the feedback loop as small as possible, like in the Clapp circuit. The tuned circuit has as high a Q as possible. With a high Q lightly loaded tuned circuit only a small circulating current flows, so that self heating and drift due to this current is minimised. If the feedback is adjusted to the point where oscillation is not over vigorous, the grid bias will be low and the tube will not have to push too hard. The ultimate in this is probably the so-called class A oscillator which uses cathode bias only and practically no grid current flows.

With the advent of Clapp oscillators appearing to lose favour to high C Colpitts and their derivatives, and higher Gm tubes being used with higher C tuned circuits, it was thought that a "back to basic principles" trial would be a good idea. After all, the major problems affecting stability, apart from obvious ones like layout and wiring, heat insulation, etc., occur not with the tube, or its feedback loop, or its loading, or its coupling, but with the tuned circuit itself. And the critical part of the tuned circuit is the capacitor, its mounting, and its dial system. It must be admitted of course that factors pertaining to the tube and its circuitry are important, but no one of these is paramount.

Once this is accepted, it may be realised that it is just as reasonable to build an oscillator with a low C tuned circuit and low Gm tube as it is with a high C and high Gm pair. All other considerations are common to any sort of oscillator.

Things to ponder over are devices like electron coupling (which with regulated power supplies loses some of its virtue), load variations, heater-cathode thermal stability, where the low gain tube with a long cathode structure need be no worse and is often better than a high gain short structure tube, input capacity, where variations due to tube heating, etc., favour the low gain tube, direct, capacitive or inductive coupling of energy from the oscillating circuit, and so on.

Weighing up all this stuff into a combination for some particular design is prone to be a bit of a juggle, and conclusion could be still wide open at the finish.

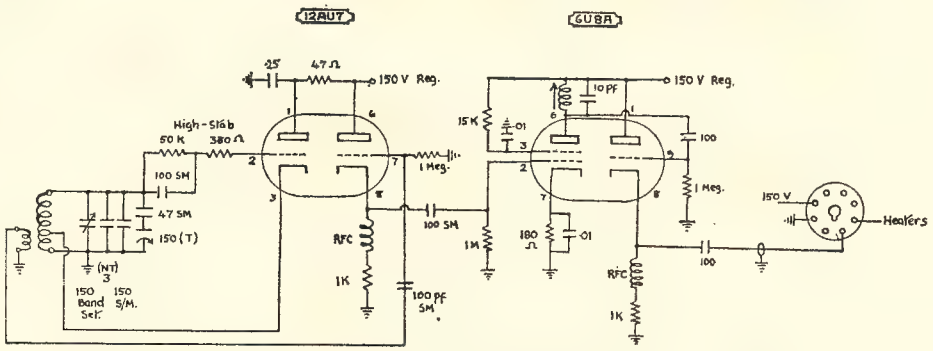


Fig. 1.—Circuit of the V.f.o. Adaptor for the Geloso Signal Shifter.

However, the main causes of drift are thermal and mechanical. The thermal drift can cause some real trouble in elimination, and there is only one satisfactory way around it. Use high quality components not readily affected by heat and also keep temperature variations around the sensitive parts of the circuit to a minimum. Mechanical difficulties should be small if the thermal stability angle has been catered for, at least as far as individual components are concerned. Layout and wiring should not be very difficult. It is certainly not necessary to use very heavy and stiff wires for connections, but it is essential to make sure nothing is in stress, or else left even slightly floppy, and this includes the wiring. Plenty of tie points should be used. In a separate v.f.o. it is a simple matter to keep the tubes well away from and above the tuned circuit.

Thermal drift is mostly due to capacity changes and to a very much smaller extent, inductance changes. Every piece of insulation around the circuit is the dielectric of a capacitor. If this dielectric is allowed to change even infinitesimally with heat, one is faced with a capacity change and the consequent shift of frequency. The best insulating materials are therefore a prime necessity. High quality ceramics are outstanding in this respect.

The tuning capacitor itself is very critical as it is essentially a variable device in its function. Wide spacing is desirable, solid bearings and casing, and brass or low temperature co-efficient of expansion metal plates. Tension winding of the inductor, preferably on a ceramic former, should reduce inductance changes to a low factor.

In the v.f.o. described here, the lowest gain tube of the 12AU series was adopted (12AU7A) in a Hartley circuit. The highest possible L to C ratio was used, due allowance being made for bandsetting capacity, tuning range, etc., in this way providing a high Q circuit. The grid of the oscillator was connected to the tuned circuit through a high stability 1 watt isolating resistor and output taken off inductively from the coil. The tuning range is from 3.5 to 3.65 Mc., but it could just as easily have been made to cover the full 80 metre band. An ARC5 coil and capacitor was available and was used because it is probable that nothing else readily obtainable would be of better quality.

The dial system is the ZL4PJ arrangement. The capacitor is mounted so that the worm gear is to the top, and a free running 2" diameter drum with scale attached is fitted on over the main worm drive shaft, and string driven with a loaded nylon cord to a similar drum which takes the place of the old ARC5 dial disc. The drums are made of the lids of adhesive tape containers. Of course there is no reason why any other suitable dial and capacitor arrangement could not have been used.

The output from the oscillator is coupled inductively to the second half of the 12AU7A, which is arranged as a cathode follower with an input resistance of several megohms. In turn, this stage supplies signal to the pentode section of a 6U8A, either as an amplifier or a doubler. The plate circuit may be tuned to 80 metres or 40 metres, or switched between both if desired. In the v.f.o. depicted, 20 metre operation was the main goal, hence the restricted

* Reprinted from "Break-In," Feb. 1963.

range and the fact that the 6U8A plate circuit was not bandswitched. The triode section of this tube is a second cathode follower, whose output impedance is approximately the same as 6J5 cathode circuit in the Geloso. When the new v.f.o. is plugged into the 6J5 socket, output from the exciter is substantially the same as when the original is used.

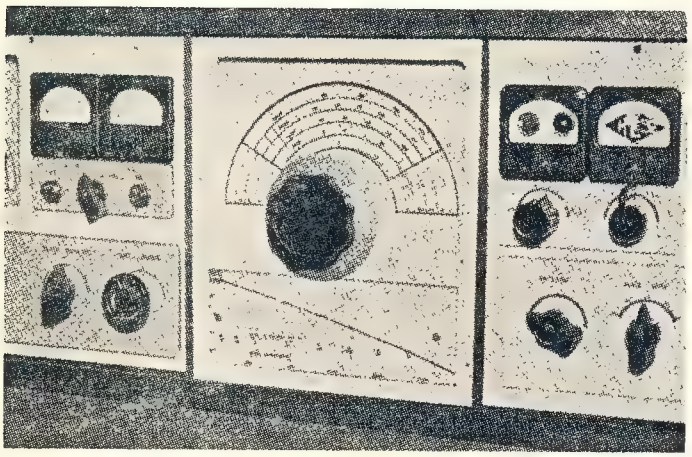
member that heat is readily transferred into it from the tube, and the dielectric constant will alter if mounded plastic or similar is used.

Button ceramic capacitors are satisfactory around the 6U8A but not around the oscillator. One should keep the length of co-ax between the v.f.o. and the Geloso to three feet or less, and the filament heater, earth and h.t. leads

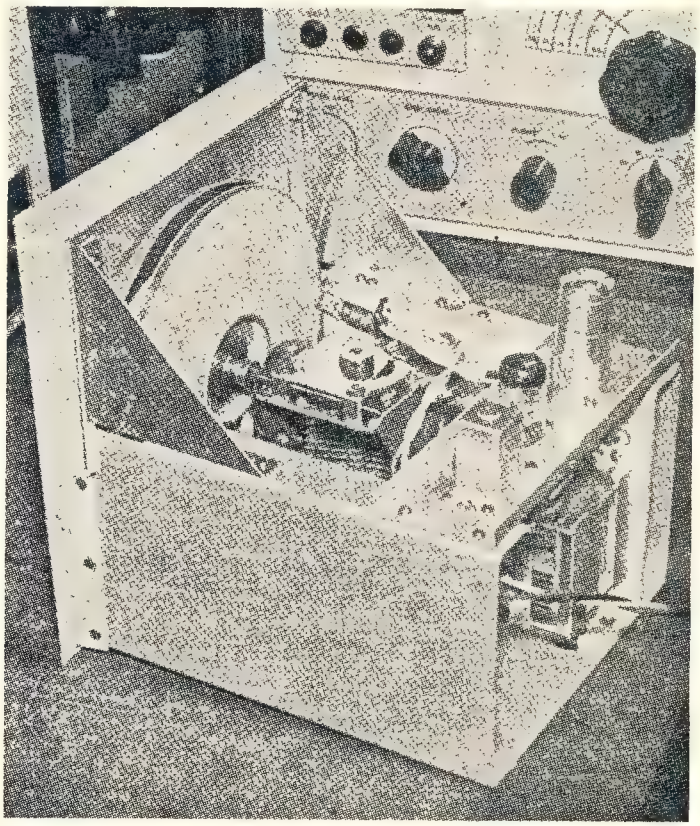
drift is very small and takes no more than 60 seconds.

Perhaps some of the statements made in this article could be considered worthy of debate. If this be so, what about an argument or two in this journal? Discussions of such a nature can be quite stimulating. But, anyway, the proof of the pudding is in the eating. ●

☆



Above: The V.f.o. Adaptor situated between the transmitter and receiver.



Right: Back view of the unit, showing details of construction.

☆

The oscillator coil has 20 turns, 1¼" diameter and 1¼" long, with the cathode tap five turns from the grounded end, and wound on an ARC5 ceramic former. The coupling coil is 10 turns wound over the grounded end and separated by a few layers of plastic tape. Anyone wishing to duplicate this exactly, and in possession of a complete coil, could use the ready made inside former and winding, connecting to pin 8 and pin 4, the latter being the grounded one.

The 80 metre plate coil for the 6U8A consists of 75 turns of 38 s.w.g. jumble wound to a length of ¼" on a 5/16" diameter shielded former, and slug tuned.

The 3 pF. negative temperature coefficient capacitor in the oscillator tuned circuit was fitted at the outset, but it is probably not having much effect. The whole structure is so open that no generated warmth is confined within the cabinet.

The tuning range of the 150 pF. capacitor is restricted with a series 47 pF. silver mica. It is not linear, but the bandspread is substantial—2 Kc. per knob rotation at the 3.5 Mc. end and 4 Kc. at the 3.65 Mc. end.

It is definitely an advantage to use a ceramic socket for the 12AU7A. Re-

may be laced onto it and wired into the plug. In doing this, make sure that the heater wire is connected to the correct pin or the filament supply will be grounded.

There is so much high impedance isolation between the oscillator and the Geloso input circuit that the latter has no load effect on the former. Nor has keying the transmitter any effect on the note. Hundreds of 20 metre contacts have been made using this v.f.o. and it has proved to be extremely stable. Many of the QSOs were with Collins owners, some of them quite lengthy rag chews, and with the receiver being used as a c.w. monitor as well as its normal service, it has been apparent that the beat note transmitted and the one received did not differ to any audible extent.

This indicates that if it is not in the same class as the Collins, it is certainly comparable and would be eminently suitable a source for supplying carrier to an SB-10 or similar unit. Warm up

SIDEBAND TOPICS

(Continued from Page 9)

detrimental to the regulator tubes. The 813 will not like it either!

It can be seen that, within the limits of the VR tubes, the screen voltage will be maintained at a constant level, in this case 800 volts. Fig. 2 shows the circuit of this amplifier.

TECHNICAL ADVICE

Do you have a problem? Why won't that piece of gear work? Arie Bles, VK2AVA, has been kind enough to volunteer his services as s.s.b. technical adviser. How Arie manages to fit in matching crystals and building filters, erecting antennae for DX work on 3.5 and 7 Mc., and chasing the said elusive DX is beyond me; but if you do have a poser, do not hesitate to write Arie; he has had considerable experience in most Amateur Radio fields.

When you write, please enclose a large stamped self-addressed envelope.

The address for the VK2AVA s.s.b. technical advisory service is: Mr. Arie Bles, 33 Plateau Road, Springwood, N.S.W.

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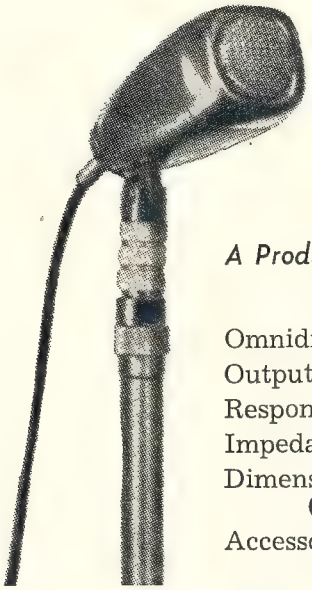

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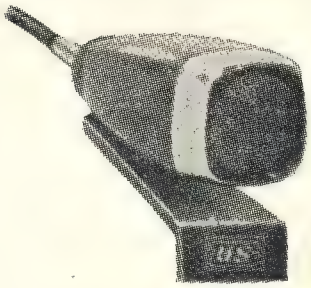

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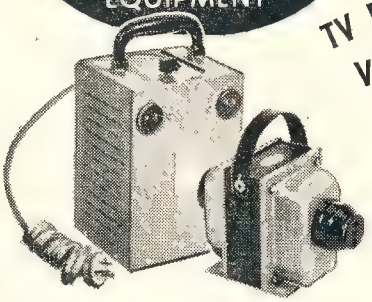

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SEMI-AUTOMATIC BEAM ROTATOR

C. J. TATUM,* VK5DY

WHEN Tubby VK5NO, or was it the wind, decided to reshape his G4ZU beam, the gear box and motor came my way. At this time no definite plans for beam rotation had been made. Some experimental work using transistors had been carried out with a somewhat different scheme to the one detailed here. This soon came to a halt when the special type of motor could not be obtained.

The original idea for this system came from the donor of the above gear. A circuit was evolved using valves and worked very well. Valves require power supplies which are bulky and heat dissipating. Transistors are ideal for these ancillary pieces of gear.

Any motor which can supply the load demand through the gear box will do. The motor used in this unit is a 50 volt transmit magslip, and originally turned the G4ZU beam. Relay contacts should be capable of direct control for low power motors, or to switch a contactor for high power units.

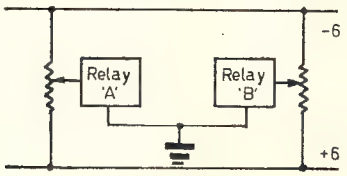


Fig. 1.

The main problem on the mechanical side is to translate the 270° potentiometer swing to one of 360° or greater. This is a ratio of 0.75 to 1, potentiometer to beam position control. Cord drum drives, as used in radio sets, can be used but may prove difficult to obtain. An easy solution is to use screw caps from jars. A bush being soldered to the centre for attaching to the ¼" shafts of potentiometer and direction indicator control. Into a small hole drilled in the grooved edge of the drum can be soldered a peg of 18 s.w.g. wire. One turn of the cord around this will prevent slip. Cord tension is accomplished as shown in Fig. 3, the potentiometer and drum being fitted to a spring-loaded pivot arm. Both potentiometers are installed in the same manner. The beam drum is attached to the final drive shaft by clamping it between two ¾" electrical conduit sockets. This same size conduit is also used to turn the beam.

Operation of the circuit can best be understood by reference to Fig. 1. The two potentiometers, P1 and P2, form a bridge balanced around earth. A position change in either of the two arms create an unbalance, and therefore a voltage differential between the inputs to relay A and relay B. The relay which receives this voltage in the positive direction will be switched on, driving the motor and beam. This in turn rotates the beam potentiometer in a direction to "back off" the voltage differential. As the beam rotates, this voltage will become less and less until balance is restored. The motor will then switch off.

Two transistors are used to operate each relay. V1 is a directly coupled amplifier and in the balanced condition R1 provides just enough forward base current to keep this transistor in the "on" condition. The collector of V1 is then very near earth. Consequently V2 has no forward bias and is therefore in the "off" condition, relay A being unoperated. A positive voltage on P1 will neutralise the forward base current into V1. The gain will be reduced to such an extent that the collector will rise to the rail voltage. The resultant forward current into the base of V2 will switch this transistor and relay on. The opposite or negative voltage applied to V4 will have no effect, the transistor already being in the "on" state, and V3 will stay "off".

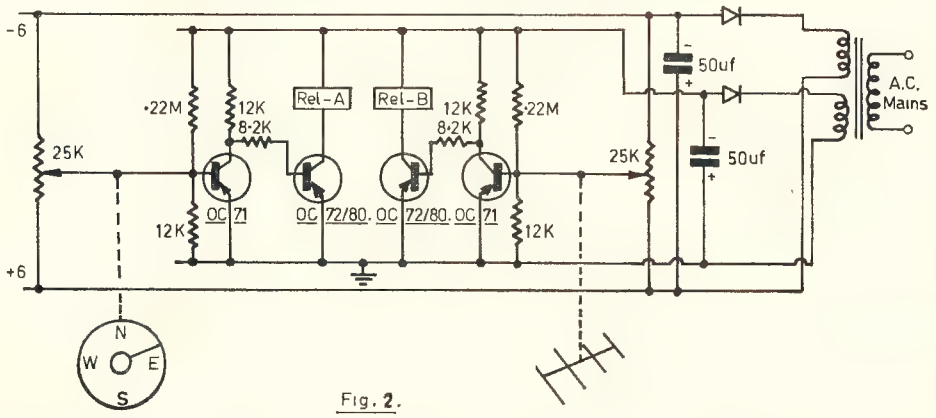


Fig. 2.

Gain in V1 and V4 is very high, in fact they act as switches, being in one state or the other. When one relay is operated the motor and P2 will continue to run until balance is restored, dropping out the relay. Flywheel effect will carry P2 beyond balance and switch on the other relay, causing the motor to run in the opposite direction. This may occur several times and is known as "hunting". To overcome this one amplifier must be made less sensitive. By decreasing the value of R1 the forward bias to V1 is increased. A larger differential voltage between P1 and P2 is now required to switch on V1 and V4, and overshoot by P2 can be tolerated.

(Continued on Page 15)

* 24 Short Road, Elizabeth, S.A. Member of the Elizabeth Amateur Radio Club.

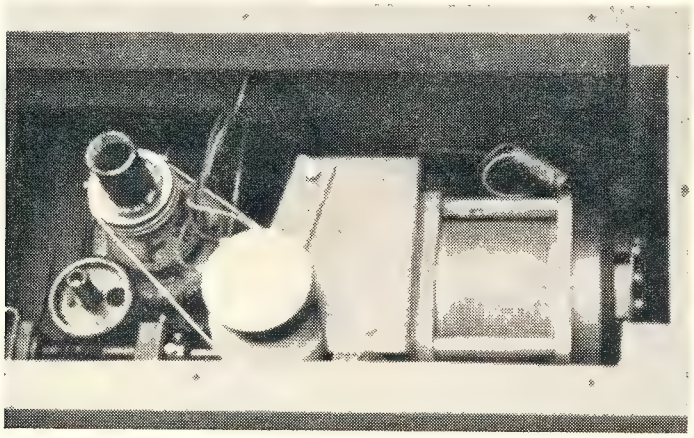


Fig. 3.—Showing the magslip motor.

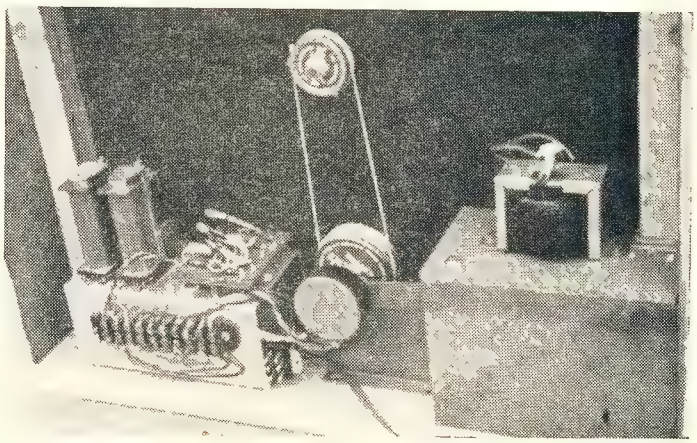
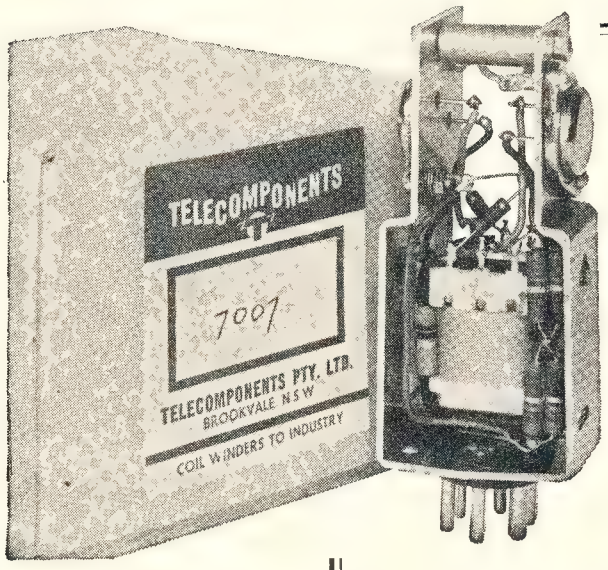


Fig. 4.

TELECOMPONENTS

REPLACEMENT VIBRATOR MODULE

(as featured in "Radio, TV & Hobbies," March, 1963)



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25

In the writer's unit R1 is 150K, but the value will differ with other transistors. Also of course the allowable differential is dictated by the damping factor of the actual beam installation. If this is optimum the beam can be inched round by steps of five degrees or less.

The relays used are 3000 types with a coil resistance of 200 ohms. Lower values of resistance can be used, but transistor ratings must not be exceeded.

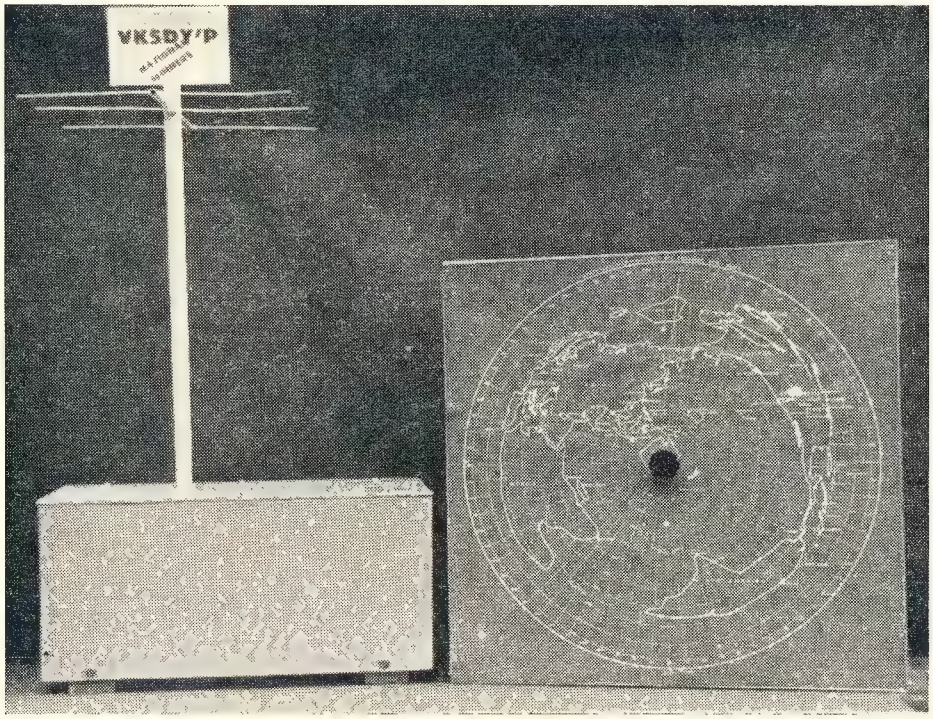


Fig. 5.—General construction of the equipment.

Each relay is fitted with two sets of make contacts. One pole on each is used to switch voltage to the "run" winding of the motor. The other poles supply the "start" winding with a suitably polarised voltage to start the motor in the correct direction.

The power supply is very simple. Many small germanium diodes are suitable and will supply about 30 mA. for the relays. Two electrolytic capacitors and a small transformer with two 6.3 volt windings make up the rest of the supply. Peak rectified voltage for the relay circuits is about 9 volts, dropping to 6 volts on load. The potentiometer supply is also 9 volts. The box in the right hand corner of Fig. 4 houses a 50 volt transformer to drive the magslip motor shown in Fig. 3. By the way, this motor lends itself admirably to the job. To drive, simply apply 50v. across two of the star-connected windings. The third winding is then taken via a 50 μF. capacitor to either side of the 50 volt supply.

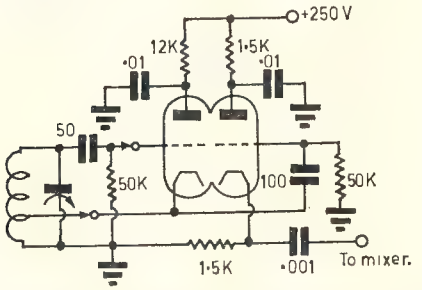
Fig. 5 shows the general construction of the equipment, and size can be measured by the QSL card. In this case a great circle bearing map as supplied by the VK5 Division of the W.I.A. is used. V.h.f. operators with very directional beams will find this a rapid and accurate method of swinging same. Maps can be made to cover their own particular area, or large road maps may be satisfactory.

Many transistors today are cheaper than valves, and yet articles on Amateur equipment using them are very few. Maybe these few notes will stimulate further interest in their use. ●

HINTS AND KINKS

A COMPANION FOR THE LIKE-NEW MIXER

The November 1959 issue of "Amateur Radio" contained an article under my signature concerning the "S9'er," which was a twin-triode circuit designed to plug into the first r.f. stage of any receiver using a single-ended tube, although I included a diagram for converting most of the tubes with the grid on top. I claimed no originality for the article, giving full credit to "CQ," May 1959, and some further information appeared in "CQ" for December, 1959. The results obtained, signal-to-noise level, etc., more than fulfilled the claims made.



Since then the "Like-New Mixer" has appeared, which is along the same lines. This also is an outstanding success, so much so, that many others beside myself have reconstructed the front-end of their receivers and are more than satisfied with the results.

Wishing to change the oscillator circuit into a twin triode set-up to bring the entire front-end up-to-date, I hunted through back copies of "CQ" and discovered in the December 1957 issue just what the doctor ordered.

The circuit is self-explanatory, and I have tried it with every type of tube procurable in VK5, with no difference in practical performance. Although the original circuit shows a 6SL7, no change in circuit component values were necessary for any other tube types, such as 12AU7, 12AX7, 12AT7, 6BK7, 6BQ7 and 6SN7. Full credit for this circuit goes to Leonard E. Geisler, Chief Engineer, Japan Electronic Trading Company.

This now makes a complete front-end of twin triodes, and is well worth the change-over. Try it, you will be more than pleased.

The 0.001 μF. coupling condenser to the mixer is OK. I was a bit doubtful and tried smaller, but the 0.001 μF. seemed to perform the most consistently. —Warwick W. Parsons, VK5PS.

IT HAS BEEN SAID . . .

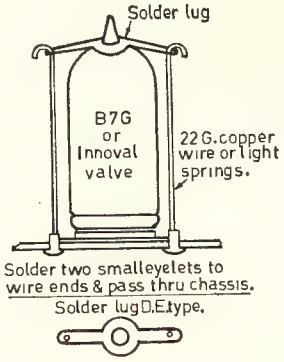
"Anyone who has had actual contact with the making of the inventions that built the radio art knows that these inventions have been the product of experiment and work based upon physical reasoning, rather than on the mathematicians' calculations and formulae. Precisely the opposite impression is obtained from many of our present-day text books and publications."

—Edwin H. Armstrong (Inventor of F.M.)

SECURING MINIATURE VALVES

Here is a cheap method of securing B7G and innoval miniature valves in place.

Use a two-leg solder lug over the glass sealing pip and secure this to the chassis with 22 or 24 gauge copper wire or very light springs.



This is an old trick utilised in servicing car radios with "loose" valves.

—B. M. Oliver, VK2NU.

KEYING GELOSO V.F.O.

A tip to the boys who like to key the oscillator of the Geloso V.f.o. Put a cathode follower stage between the oscillator and the buffer. It gets rid of the yoop! This specially applies to the Model 104.

—VK3ARX.

Modifications to "A 100 Watt P.E.P. Band-Switched Phasing S.S.B. Transmitter"

The author has recommended three modifications to the "100 Watt P.E.P. Band Switched Phasing S.S.B. Transmitter" ("A.R.," Oct. 1962) which may be of interest in connection with the above transmitter.

(1) The earth connection of the vox output 6AU6 at the junction of the 2K and 25K resistors to be lifted and made through a normally closed push button or key switch (see Fig. 1).

This allows push-to-talk operation as well as the normal vox, and is an advantage.

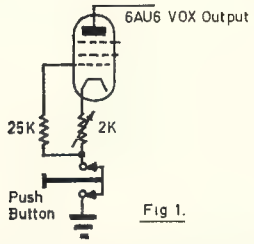


Fig 1.

[An erratum has occurred in the above drawing. The top of the 25K resistor should go to the screen-grid, not the control grid.—Editor.]

(2) The 6CL6 mixer-driver cathode bias resistor to be reduced from 320 to 120 ohms (see Fig. 2) to allow more drive on some of the higher frequency bands.

(3) Damage to the 807s could result due to excessive screen current if operated without h.t. on their plates, which would happen if SW3 in the power supply is not made when tuning up the stages prior to the output.

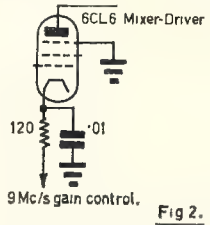


Fig 2.

Many protective systems should suggest themselves, however the following is fairly simple and will give the necessary protection (see Fig. 3).

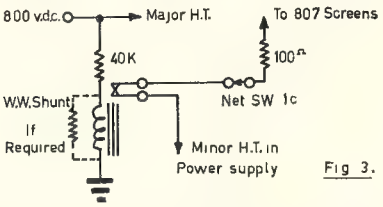


Fig 3.

A relay, which will operate on approximately 20 mA. or the normal bleeder current, could be inserted in series with the earth end of the 40K bleeder resistor and earth, in the major h.t. power supply. Should the relay be too sensitive it could be shunted with a suitable wire wound resistor to assure the relay would fall out when the major h.t. dropped below a reasonable figure.

The screen voltage previously taken from the minor h.t. inside the exciter will now be obtained through the normally open contacts of the relay from the minor h.t. inside the power supply unit, and taken up to the exciter by another connection. This may mean changing to a larger male and female plug and socket.

The relay will now operate when SW3 is made, its contacts will close and voltage applied to the screens of the 807s via net SW 1C. Failure or a pre-determined drop in the major h.t. will cause the relay to fall out, removing the screen supply.

Of course it may be preferred to take the screen voltage from the major h.t. and regulate it with the appropriate number of VR tubes, which would supply its own protection.

—A. S. Mather, VK2JZ.

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R.," and back copies may not be available upon request. To preserve continuity of your files of "A.R.," please pay your annual subscription now.

Jock VK3PZ operating at the Publications Committee tent during the 1963 National Field Day.

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TRIMAX DIVISION

VK-ZL-OCEANIA DX CONTEST, 1962, RESULTS

In presenting the results of the 1962 VK-ZL-Oceania DX Contest, I would first like to thank all those who submitted logs and to congratulate the winners. In the Overseas Section the various band scores have not been indicated although awards have been issued to the top scorers on individual bands as well as to the overall top scorers.

N.Z.A.R.T. decided to broaden the scope of the Contest this year to include Oceania as an area for the world to contact in addition to VK and ZL. Every effort was made to ensure plenty of activity from the available Oceania DX areas but it is regretted that numerous promises of activity from rare DX areas did not materialise. Nevertheless, there was an increase of some 12½% in the number of logs returned. Without a doubt the inclusion of Oceania was an excellent move—a fact proved by the many complimentary remarks made by overseas contestants. Lack of VK and ZL activity is still cause for concern however.

It is regretted that this Contest clashed with a Contest organised by East Germany. It must be pointed out that the VK-ZL-Oceania DX Contest was held over the same period (first two week-ends in October) as it has been for many years as the VK-ZL DX Contest.

Once again N.Z.A.R.T. is providing attractive coloured awards for Contest winners in the belief that such items are of greater value than mere "certificates". The 1963 Contest will be organised by the Wireless Institute of Australia, but N.Z.A.R.T. will again be responsible for the Contest in 1964 when we will be happy to have your company. It is our desire to make this Contest as enjoyable and as rewarding as possible. Because of this your comments as a competitor are of great interest and these are solicited. All comments will be gratefully received.

Good DX and 73,

Jock White, ZL2GX,
Contest Manager, N.Z.A.R.T.

AUSTRALIA

C.W.—

Call	80/40	20	15	10	Total
VK2APK	1320	3800	3395	155	8670
2EO	2890	5410	—	—	8300
2RA	530	2265	2700	525	6020
2ZC	—	2875	—	—	2875
VK3ARX	1445	5640	2155	—	9240
3DQ	2645	3590	1925	135	8295
3AXK	1880	3775	2340	—	7995
3TL	—	6100	—	—	6100
3RJ	785	1980	1045	—	3810
3XB	2110	55	1420	—	3580
3KS Check					
VK4SN	—	1805	1930	—	3735
4SD	—	2370	—	—	2370
4JB Check					
VK5CV	705	4265	2565	—	7535
5RX	—	3690	—	—	3690
5NO	3320	—	—	—	3320
5WO	—	1295	550	160	2005
5JE	1190	—	—	—	1190
VK6RU	495	4760	6405	—	11660
6AS	105	145	235	—	485
VK7DK	555	3190	740	—	4485
7SM	715	2805	745	—	4265
VK8UX	—	55	55	—	110

Band Leaders—C.w.

80 Metres:	VK5JE	275	points
	2RA	55	„
	3DQ	55	„
40 Metres:	VK5NO	3320	„
	2EO	2890	„
	3DQ	2590	„
20 Metres:	VK3TL	6100	„
	3ARX	5640	„
	2EO	5410	„
15 Metres:	VK6RU	6405	„
	2APK	3395	„
	2RA	2700	„
10 Metres:	VK2RA	525	„
	5WO	160	„
	2APK	155	„
All Bands:	VK6RU	11660	„

PHONE—

Call	80/40	20	15	10	Total
VK2AHT	745	4460	265	—	7470
2APK	—	1270	1665	—	2935
2AKF	—	1545	290	—	1835
2RA	—	995	—	—	995
VK3TL	—	2150	—	—	2150
3HL	—	1800	—	—	1800
3BW Check					
VK4LT	—	2985	830	—	3815
VK5CV	475	595	2765	—	3835
5FT	—	1105	—	—	1105
VK6RU	—	2400	1145	—	3545

Band Leaders—Phone

80 Metres:	Nil		
40 Metres:	VK2AHT	745	points
	5CV	475	„
20 Metres:	VK2AHT	4460	„
	4LT	2985	„
	6RU	2400	„
15 Metres:	VK5CV	2765	„
	2AHT	2265	„
	2APK	1665	„
10 Metres:	Nil		
All Bands:	VK2AHT	7470	„

RECEIVING—

WIA-L2033	1060	points
WIA-L3065	2205	„
BERS195	8195	„
(VK4) Lane	730	„
WIA-L6003	440	„
WIA-L6021	3215	„

NEW ZEALAND

C.W.—

Call	80/40	20	15	10	Total
ZL1AH	1960	7195	6400	1210	16765
1AJU	1510	7055	6395	1165	16125
1AMO	3035	7380	3015	1480	14910
ZL2AYJ	2335	5350	2745	—	10430
2ATI	—	4760	—	—	4760
2ADE	2795	—	—	—	2795
2LB Check					
2GX Check					
ZL4OP	—	2935	—	—	2935

Band Leaders—C.w.

80 Metres:	ZL1AMO	385	points
40 Metres:	ZL2ADE	2795	„
	1AMO	2650	„
	2AYJ	2335	„
20 Metres:	ZL1AMO	7380	„
	1AH	7195	„
	1AJU	7055	„
15 Metres:	ZL1AH	6400	„
	1AJU	6395	„
	1AMO	3015	„
10 Metres:	ZL1AMO	1480	„
	1AH	1210	„
	1AJU	1165	„
All Bands:	ZL1AH	16765	„

PHONE—

Call	80/40	20	15	10	Total
ZL1AIX	2015	7585	4840	700	15140
1KG	1380	7095	3805	1370	13650
1AGO	—	4810	—	—	4810
ZL2AAG	2480	—	—	—	2480
2GX	—	1980	—	—	1980
ZL3VI	—	1535	2045	—	3580

Band Leaders—Phone

80 Metres:	ZL1AIX	210	points
40 Metres:	ZL2AAG	2480	„
	1AIX	1805	„
	1KG	1380	„
20 Metres:	ZL1AIX	7585	„
	1KG	7095	„
	1AGO	4810	„
15 Metres:	ZL1AIX	4840	„
	1KG	3805	„
	3VI	2045	„
10 Metres:	ZL1KG	1370	„
	1AIX	700	„
All Bands:	ZL1AIX	15140	„

RECEIVING—

DX37A	10585	points
ZL282	1905	„

OVERSEAS

C.W.—

North America

K1RTB	1122	pts.	
W1WY	92	„	
W1CKA	68	„	
W2IOP	810	„	
W2WZ	248	„	
W4AZK	1395	„	
W4KXV	133	„	
K4BAI	60	„	
W4NTE	44	„	
K5KBH	4758	„	
W5WZQ	4100	„	
W5KC	1900	„	
W5BRR	1854	„	
W5PSB	553	„	
K5UYF	360	„	
K5JZY	72	„	
W6HJT	8118	pts.	
K6EVR	5236	„	
W6ISQ	798	„	
WA6SBO	711	„	
W6FYM	196	„	
W6TMX	132	„	
K6IEC	32	„	
W7PQE	4008	„	
W7EWR	30	„	
W8JIN	6169	„	
K8QJH	994	„	
W8MCC	20	„	
K0VSH	16	„	
KP4CC	18	„	
XE1PJ	16	„	

South America

HK7ZT	196	pts.	
HK7YC	112	„	
PY1ADA	190	„	
PY4GA	144	pts.	
PY4OD	87	„	
PZ1AH	6	„	

Europe

DJ2RE	406	pts.	
DL3BK	352	„	
DL7CS	224	„	
DJ7IK	168	„	
DJ6LV	168	„	
DJ2XP	168	„	
DL1SV	144	„	
DL4FT	40	„	
DJ3VC	12	„	
DL6DF	12	„	
DJ2IW	2	„	
F8IH	280	„	
F8TM	2	„	
F2SQ	2	„	
G4CP	847	„	
G5WP	819	„	
G3JAF	380	„	
G3DYY	288	„	
G3KSH	80	„	
G3WP Check			
GW3JI	156	„	
HA1KSA	420	pts.	
HA6NI	88	„	
HA8CZ	2	„	
HB9TT	156	„	
LA5HE	210	„	
OK2EI	312	„	
OK1FV	256	„	
OK2KJU	120	„	
OK2KAU	90	„	
OK1ADP	50	„	
OK2BBI	24	„	
OK1KRM	8	„	
OK1AAA	8	„	
OK3CDP	8	„	
OK2ABU	4	„	
OK3EA Check			
ON4LX	320	„	
OZ4H	36	„	
OZ7GC	3	„	
OE1RZ	1144	„	
OE3WB	80	„	

(Continued on Page 19)

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L278—Sound I.F. Transformer
L279—Ratio Detector Transformer
L147—I.F. Coupling Transformer
L149—I.F. Coupling Transformer
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OH1VA	2 „	SM5BDY	24 „
PA0ADP	333 „	SM5CEU	24 „
PA0LOU	210 „	SM5CDU	8 „
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SP7HX	100 „	SM6ARH	32 „
SP2HL	8 „	SM7CAB	156 „

Asia

JA1VX	4494 pts.	JA3JM	102 pts.
JA1EM	2794 „	JA4AOE	2176 „
JA1ISB	1456 „	JA4IO	1178 „
JA1ITX	936 „	JA4AQR	252 „
JA1HTK	432 „	JA4EE	4 „
JA1CZG	405 „	JA5AKC	30 „
JA1EFE	264 „	JA6PY	504 „
JA1IRS	238 „	JA6ACZ	351 „
JA1KKA	224 „	JA6ZV	168 „
JA1IBX	95 „	JA6HW	147 „
JA1AJA	56 „	JA6BCV	70 „
JA1GIS	40 „	JA7AD	1605 „
JA1BUN	40 „	JA7AKQ	60 „
JA1CUN	21 „	JA8BY	296 „
JA1CXC	18 „	JA8AAM	102 „
JA1IZ	1 „	JA8AAC	4 „
JA2ANX	2700 „	JA9FB	70 „
JA2WB	2645 „	JA9UU	24 „
JA2LA	684 „	JA9NB	18 „
JA2CA	98 „	JA0EZ	826 „
JA3CUK	3465 „	JA0PX	420 „
JA3AVO	676 „	KR6LJ	891 „
JA3DAZ	162 „	4X4MJ	108 „
JA3DMJ	126 „		

Oceania

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KC6BK	2124 „	KH6DKA	656 „

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UB5KED	147 „	UA9FV	12 „
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UA1ND	2 „	UA0KCA	855 „
UA3UJ	259 „	UA0GF	414 „
UA4PA	472 „	UA0KAD	132 „
UA4HL	36 „	UA0SE	120 „
UA6LI	240 „	UA0LL	92 „
UH8BO	2 „		

PHONE—

North America

K2GXI	204 pts.	K6EVR	3244 pts.
W2WZ	30 „	K6ERV	2014 „
W4RLS	224 „	WA6SBO	228 „
W4BVV	180 „	K6AHV	85 „
K5MDX	4425 „	W6ISQ	Check
K5KBH	2208 „	W7ESK	3960 „
K5UYF	90 „	K9ECE	208 „
W5KC	108 „	KP4CL	224 „

South America

LU1DAB	144 pts.	YV5AKP	235 pts.
YV5AQS	620 „	YV5AHG	217 „

Europe

DL9KRA	816 pts.	OH2AA	720 pts.
DJ2UU	132 „	OK1MP	14 „
DL6DF	4 „	OK2HAU	2 „
DL1SV	1 „	ON4LX	24 „
EI8P	52 „	SM3BIZ	572 „
G8PO	2070 „	SM5LL	234 „
G4CP	105 „	SM5CZQ	140 „
OE1RZ	576 „	SM5BGB	18 „
OE1ME	574 „	SM7CAB	24 „

U.S.S.R.

UR2AR	42 pts.	UM8KAB	36 pts.
UP2NV	16 „		

Asia

JA1BWA	2261 pts.	JA4EE	2 pts.
JA1BUI	384 „	JA5AHH	20 „
JA1EHA	8 „	JA6PY	477 „
JA1GSG	8 „	JA7CK	105 „
JA1AJA	8 „	JA8BY	12 „
JA1IZ	2 „	JA9UU	21 „
JA2ANX	2232 „	JA0AC	180 „
JA3BBG	126 „	9M2DQ	2346 „
JA3BEA	84 „	KR6NG	1005 „
JA3CUK	40 „	KR6LJ	539 „
JA4AQR	168 „		

Oceania

FK8AC	392 pts.	KG6AJB	2616 pts.
KC6BK	1230 „	VR3O	4160 „
KH6EVT	235 „	ZK1AR	3278 „

RECEIVING—

Europe

A2114	672 pts.	HA5-036	108 pts.
A2340	288 „	OK3-9280	240 „
A2946	264 „	DL9286	576 „
BRS24643	160 „	DA-A-0016	Check
HA9-007	208 „	OE1-1054	406 „
HA8-708	154 „	SM5-D61	12 „

North America

K2-7079	70 pts.	VE3-9301	352 „

— . . . —

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During 10 days operation of ZD6JO (by ZE3JO/ZE3JJ) last October, ZE-3JO often used his artificial leg as an antenna for contacts, not only local but also with stations as far afield as Belgium and Germany.

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Phone: 45-6021 (4 lines)
Telegrams: "Metals," Adel.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

TESTS ON 1296 Mc.

Editor "A.R.," Dear Sir,

The following is a description of some tests on 1296 Mc. carried out during the week-end of 2nd to 4th March.

On 2nd March VK2ZCF and VK2ZAC made a two-way contact on 1296 Mc. over a 1-mile path, using crystal controlled equipment at both ends. Time 1400 hours.

Signals were 5 and 9 both ways and this contact was to check the compatibility of the two stations. To the best of my knowledge this is the first two-way contact of this type in Australia.

On 4th March VK2ZCF transported his equipment to Mt. Bowen (near Kurrajong Heights) and contact was established with VK2ZAC at Narwee (a Sydney suburb) over a 37-mile path. VK2ZCF's report at VK2ZAC was 5 and 8; VK2ZAC's report at VK2ZCF 5 and 9. Time 1010 hours.

Later VK2ZCF moved to Mt. Esmah and again made contact at 1330 hours over a 47-mile path. VK2ZCF's report at VK2ZAC was 4 and 5, VK2ZAC's report at VK2ZCF 5 and 9.

The reason for the poor report in one direction during the latter contact was due to lack of battery power at the portable station.

I would like to submit this latter contact as an Australian record for this band.

Description of the gear. VK2ZCF: transmitter, 8 Mc. crystal, 12BY7, 12BY7, 12BY7, 832, 2C39, 2C39—24, 72, 144, 144, 432, and 1296 Mc. Power input to last stage, 12 watts. Modulation, a.m. Receiver, crystal controlled converter using silicon diode mixer and 7 Mc. cascode i.f. amp. 6BQ7A into communication receiver. Local oscillator chain, 20 Mc. crystal 6U8, 6J6, 6J4, crystal diode frequency doubler. Antenna, 16 element phased array, coax. fed.

VK2ZAC: transmitter, 8 Mc. crystal, 5763, 5763, 5763, QQE03/12, 2C39, 2C39—24, 48, 144, 144, 432, and 1296 Mc. Power input to last stage, 12 watts. Modulation, a.m. Receiver, crystal controlled converter using silicon diode mixer and 14 Mc. series cascode i.f. amp. 6ES8 into BC342 receiver. Local oscillator chain, 11870.3 Kc. crystal 6U8, 6AK5, 6AK5, crystal diode tripler. Antenna, 32 element phased array up 32 ft, feedline 50 ohm coax.

Independent observers who witnessed these tests were VK2ZDE and VK2ZPB.

—W. R. Cox, VK2ZAC.

50 Mc. AWARD FOR S.W.L's.

Editor "A.R.," Dear Sir,

Re your query if any s.w.l. has received QSLs from all VK States on 50 Mc.

I have received QSLs from VK2RS, VK-3ZAT, VK4ZBM, VK5ZBR, VK6WG, VK7ZAI, VK8AV, VK9XK. If there is an award available to s.w.l. would like to have information and cost, etc. Will send QSLs and list.

I also have QSLs for 50 Mc. from ZL1, 2, 3; JA1, 2, 3, 4, 5, 6, 8, 0; VR2CG, KH6UK, K6ERG, and KA2FW.

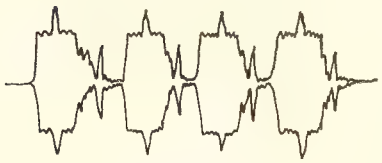
Hoping to have something re the award soon. 73,

—Charles H. Thorpe, WIA-L4018.

☆

A LINEAR AMPLIFIER FOR 50 Mc.

(Continued from Page 3)



R.I's. despair or a slight case of t.v.i.

Severe non-linearity due to instability, parasitic or t.p.t.g. oscillation on peaks. Waveform bears little relation to correct one. Amount of intelligent information conveyed negligible. Drastic action called for. ●

V H F

50 - 144 - 288 - 576 - 1296 Mc.

Sub Editor: LEN POYNTER, VK3ZGP.
14 Esther Court, Fawkner, N.15, Victoria
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

Before commencing these Notes, I would like to thank Bill Roper for his past work and hope I can measure up to his standard. All Divisional Correspondents, please forward reports to the new address above—not later than the first of the month please! I would like to impress on each one that this page is the only information many have of v.h.f. activity and with your help I would like to give a real picture of activity in your State. Most Divisions have newsletters, but overall this page is for v.h.f. Listeners! Where are you? Why not send me your reports on band conditions—what you hear, etc. The greater the range the greater the service we can render.

In VK3 there is becoming available quantities of surplus radio-telephones—low band 70-80 Mc. a.m. and these are finding their way into Amateur hands. Most are aware of the f.m. carphone net here in VK3 on 2 mx, well a move is being made here to establish a net on 6 mx for the a.m. carphones. At the March meeting of the VK3 V.h.f. Group, a motion was passed requesting that 53.00-53.20 Mc. be reserved for fixed frequency equipment and a committee has been set up to pursue this matter. This equipment will surely become available in other States eventually and now is the time to get together and form an Australia-wide net—a common frequency mostly without co-channel interference that any mobile user can go anywhere and have a reasonable chance of a QSO. It will be almost as good as a beacon because a call in VK3 could produce a reply from VK4, etc. We hope all Divisions will consider this suggestion when it is put officially. Think it over in the meantime.

Interstate Co-operation. Unlike F.E. all the V.h.f. Groups are rather loosely held together on a nation-wide basis. Because v.h.f. is becoming more than a local band and activity is increasing each year, it is high time that the Groups in particular found some way of keeping close together in the way of exchange of ideas, information, etc. Co-ordination of field days is a point we could well commence with—how about trying if each Group were to appoint a correspondent to keep in touch with each other Group. A greater degree of co-operation could be achieved.

If you are all wondering what happened to the special v.h.f. issue of "A.R." last year, well unfortunately a great deal of the material failed to eventuate. Those who did send material, my sincere thanks. Perhaps we will try again in the future. I still say we can do it! 73, Len 3ZGP.

NEW SOUTH WALES

144 Mc.: The March fox hunt finished at Brighton-Le-Sands where the fox had his tides back to front and the antenna was not on the edge of the beach but some 6 feet into Botany Bay! This is a well known lovers' lane area and some of the reports on the activity are unprintable. The winner was David 2ZVW, 2nd Dave 2AWZ and third Paul 2ZPJ. Dave actually arrived on the scene earlier but decided that no one would put an antenna in Botany Bay.

Activity on the band is only light. Received a letter from Mac 2ZMO with some Newcastle news. Unfortunately Mac has had t.v.i. problems. A new station is Bill 2ZCV at Cessnock, running a pair of 2E26s with about 20w. input. Regulars include 2ZKW East Maitland, 2ZSG Newcastle, 2EY Maitland, 2XT, 2ZIF, 2RJ, and 2AYL.

1296 Mc.: Further to Bill's (2ZAC) effort of his DX with Dick 2ZCF, Bill has come up with some cunning ideas. He has mounted a reflector screen 36 x 42 inches at the top of his mast inclined at 45 degrees and the antenna is mounted at roof level firing at the screen. This has the advantage of reducing his lead in length from 60 ft. to 6 ft. and gives at least double the radiated power.

Bill has also been trying out some varactors and finds that multiplying from 160 to 500 Mc. with 15 watts drive he can obtain 12 watts out, which is not bad efficiency. Even multiplying five times to 800 Mc., he can get 7w. out. It becomes obvious that varactors are the answer to a u.h.f. man's prayer. Bill has suggested that for anyone who is thinking of coming on to 1296 Mc. that they try to come out at 1296.1 Mc. plus or minus 50 Kc., which will facilitate finding stations. 73, 2ZLB.

SOUTH AUSTRALIA

50 Mc.: Considering the large number of new stations that have been mentioned in these notes over the past three months, activity is very poor. The only DX for March was an opening to VK4 on 11th and another opening to VK4 and VK2 on the 12th. Signals were quite good on both occasions, however only a limited number of stations seemed to be active.

5NW at Crystal Brook is now on 50 Mc. using an 815. Col 5RO reports working 3AOS occasionally on tropo (distance about 270m.). 3AOS was previously 3ZFM and is probably better known under his old call.

144 Mc.: Very good news on this band is the fact that Gary, the son of Herb 3NN, now has a Limited licence. Herb has been greatly missed on 6 and 2 mx over the past few months and we hope Gary will be able to find time to keep activity from Yanac going. 5KM in Victor Harbor (50 miles south) is on 144.2 Mc. and has been working into Adelaide as well as working Hughie 5BC at Renmark. Our friend at Victor Harbor is using a 24 element phased array and 60w. to a 6/40.

An old timer who has recently made a re-appearance on 144 Mc. is 5LE at Galga (150 miles east of Adelaide). 5LE is not very far from 5BC and should be a good bet for the Western Victoria chaps. Colin 5RO is one VK5 who has worked 5LE recently. Keith 5ZMK at Wasleys reports working the Mt. Gambier fellows regularly on 144 Mc. Signals worked include 5CJ and 5ZGR, this is a haul of about 250 miles. We understand that 3ASW in Western Victoria will be coming on 144 Mc. soon (freq. unknown). Shep 5DC has been on 2 mx recently with an excellent signal. Shep is believed to be using a Gonset "Communicator". 2ZGC at Broken Hill is still skeding Adelaide stations with reasonable success.

General News: The annual picnic was held at Mt. Barker (1600 ft.) on 31st March. About 40 souls attended in 12 cars, 10 of the cars were fitted with mobile. Unhappily, the eating of chops took preference over working long haul ground-wave from this magnificent location, however we are assured that a good time was had by all. Barry 5BQ was airing his recently acquired vehicle, which met with the unanimous approbation of all members.

Gary 5ZK, after spending many weeks constructing a quad for the low frequency bands, erected it recently to have the whole thing come to the ground a couple of days later. This was bad luck, but Gary informs me that the damage was mainly superficial and that he hopes to have the quad back up soon.

After a lull over the past 12 months or so activity on 288 Mc. is understood to be at quite a high level. Vic 5JH on a recent portable jaunt worked 22 different stations on this band.

Pending the arrival of Doug 8KK back in Adelaide, the Sunday morning v.h.f. broadcast has been handled for the past couple of months by Brian 5ZBR. Doug is our newly elected v.h.f. group chairman and is expected home in April. Al, 5ZCR.

WESTERN AUSTRALIA

February Meeting: A good attendance was noted and Laurie 6ZAH from Darkan and Les 6CL from Carnarvon were present. Good to see you boys from the country. We hope more of you will be dropping in to see us.

Fox Hunt: The hidden tx run by Lance 6LR posed some problems, not only the tx but the signal and tone were also hidden. What happened Lance? Did you consider the boys had been getting it too easily? The result was worked out on a time mileage basis and Tony 6ZDT with Ray 6RY a close second, came in the winner. Tony 6ZDT promises to have a real poser for next month.

Full Calls: We have been advised that Cedric (ex 6ZBC) is now 6CD and Bill 6ZDC's full call is not known yet. I have been assured that we are not losing them from the v.h.f. bands.

50 Mc.: S.s.b. is in the news again. John John 6ZAG has his working and Tom 6ZCA is using d.s.b. but almost has a s.s.b. rig completed.

It has been heard on the grape vine that a 6 mx mobile force is reaching maturity in Geraldton. Brian 6VV, Bruce 6RR, Noel 6MF and Ted 6WH are in the throes of construction and before long should be making their presence felt. This activity is very heartening after the successes by Bob 6BE and Brian 6VV on the Perth-Geraldton path, so there should be more signals from the north next year.

Mike 6ZCX has unleashed his new secret weapon, 80w. to an 815 and making himself heard by all and sundry. Ken 6ZBT is reported to be hibernating this year as university is interfering with his Amateur activities. As he was one of the regular gang, he is sure to be missed. Colin 6ZCI will most probably be finding the same trouble, but we hope to hear the boys when study permits.

144 Mc.: Neil 6ZDK has just completed a very nice home station-cum-portable 144 Mc. unit, using a Geloso v.f.o. This unit has in-built switching for 6 or 12v. heaters. After ironing out drive problems to the 832A by investing in a new 12AT7, Neil believes as I do he has quite a potential signal source. Mac 6ZDQ in anticipation of a posting back to Laverton to complete his radio training, is building up 144 Mc. Watch for him in VK3 before the year is out.

576 Mc.: Further reports on Rod 6ZDS and Charles 6LK's 37-mile effort on this band is that signals were 5/9 each way and all gear is xtal locked. They are now looking for two mountains, or hills, approx. 100 miles apart. They believe they can set up a really worthwhile record. Anybody having two such hills will find the addresses in the Call Book, but should pay freight on same before shipping them to the boys.

To all owners of those pencil type mikes with the slide switch on top. One of our local boys would like to console any others who have been caught. He gave a wonderful discourse the other night approx. 25 minutes on a certain subject only to be told when he went over he had no modulation! His switch is now taped on. 73, Alyn 6ZDM.

PAPUA

50 Mc.: On 23rd March the band opened most surprisingly to Brisbane from 1700-1830 hours. Only two stations heard and contacted were 4ZAX and 9ZBV/4. Dane's signal was S8-9 for most of the opening, so presumably no other Brisbane stations were operating at the time. This is the first time that an opening has been observed to VK in March. No sign of a JA opening so far, this appears to be running late as JAs have been worked in March in previous years. Scatter stations on 49.8 and 49.9 Mc. were noticed on six nights at the end of the month. 49.8 Mc. bearing N.E. was the best signal being many db. over S9 for several hours on the night of 27th. 49.9 Mc. signals bearing N.W. reached S9 on four occasions.

144 Mc.: No activity during the month. No t.v. signals were observed in March. 73, 9AU.

W.P.X.

(as at 1st April, 1963)

C.W.

VK3XB	411	VK3CX	325
VK3KB	400	VK5NQ	317
VK2QL	398	VK6WT	316
VK4SS	391	VK3RJ	313
VK2APK	346	VK3ARX	310
VK5NO	327	VK4TY	298

PHONE (A.M.)

VK6RU	421	VK6KW	303

Urb W2DEC, DX Editor "CQ", states the following in relation to W.P.X. tallying: "When a prefix for a geographic area changes, either the old or new prefix may be claimed **but not both**. An example of this would be ZD2 and 5N2. Also prefixes do not concern themselves with countries so that VU2ANI and VU2MD, while being two different countries, count only as VU2 for prefix purposes. When a prefix is no longer authorised for use it may not be counted, such as FF8, FQ8, etc."

D X

VP4, OA4, BV, ZM7, 7G1, FP, AC5, MP4, ZC6, TY2

Sub Editor: ALAN SHAWSMITH, VK4SS (Phone 4-6526, 7 a.m.-4 p.m.)
35 Whynot Street, West End, Brisbane, Qld.
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

These past few weeks things seem to have been quiet. VK activity has been lagging, which is not surprising, as the bands have been patchy and not many good prefixes are being worked.

80 mx will probably remain quiet now until after winter, and the few signals that show up on 21 Mc. are weak and QSB.

NOTES AND NEWS

ZD7BW will be the call of G3PEU when in St. Helena after August 7, 1963. He is taking a complete s.s.b. station and hopes to get ZD7SE interested in sideband whilst on the island ZD7BW will be active for at least four months.

QSLs for LA9RG/P should go through LA8LF and replies are being received speedily.

LA8SE/P is now active from Jan Mayen and may be usually found on the low end of 14 Mc. QSL via the LA Bureau.

Inaudible mostly under the beehive activity around 16th March last, was VS9ADV/P. If you were lucky enough to land a QSO, send your QSL to VS9AAA. This operation was from Yemen and is authentic and will count for D.X.C.C.

Also during March last, G3ERN and G3OQT worked ZL3RB on 160 mx on long path. Peak conditions were around 8th March. Did any VKs manage to break through? I would like to know.

5R8AD, Malagasy Rep. (Madagascar) is on 21.072 Mc. on c.w. at 1700 hrs. GMT.

The South Orkney Island, represented by VP8GQ, can be worked on all bands from 20 mx to 160 mx on c.w. nearly every night. Has been reported on 20, 80 and 160 mx.

CR7IZ at 1800 and 2100 GMT is operating on 21090 Kc. on c.w.

5X5IU is on 21031 Kc. c.w. at 2015 GMT.

Gus W4BPD is QRT at the time of writing this and it is not possible to say where he will be six weeks hence, when this reaches you. His next anticipated stop is Tromelin Is., FR7MC/T.

JA1EEB/KG6 is active on Marcus Island on c.w. until the end of June, 1963. The op. is a member of the Japanese meteorological team and is on 7008, 7010 and 14040 Kc.

Rota Is. is reported to be on the air as KG6R or W9WNB/KG6E on all bands on c.w. and s.s.b.

Navassa Trip Postponed. The United States has requested that no DX-pedition be sent to Navassa until further notice as apparently they do not wish to alarm Castro.

Reports are that Danny Weil is selling Yasme to return to U.S.A. and abandon his round world trip. We would like to have seen Danny and Gus arrive at the same rare spot together and perhaps find Dick W0MLY already on the job!

AC3PT is reported to be ready to stir up some activity.

Stuart F. Meyer announces the creation of the "DX-pedition of the month," in the interest of world-wide s.s.b. and c.w. DXing. This programme will commence approx. 1st May with: May 1-15, VR1N, Ocean Island; May 15-30, VK9BH, Nauru; June 1-30, VR4CB, Solomon Islands. Operation will be in the 80, 40, 20 and 15 mx bands with special events from time to time in the 160 mx band. International reply coupons or self-addressed stamped envelopes will not be required for QSL cards which will be handled through Hammarlund DX-pedition, General Post Office, P.O. Box 7388, New York 1, N.Y., U.S.A. S.w.l. listener cards will also be confirmed.

WANTED: Would Alan Vegas (ex-VR4CV) please send his present address to Eric Trebilcock (BERS195), C/o. P.O. Box 36, East Melbourne, C.2, Vic.

ACTIVITIES

Frank VK2QL was not very active this month but recorded these. 7 Mc. wkd.: UD-6AM, 6O1ND, XE1OK and heard SV0WC, FB-8ZZ. 14 Mc. wkd.: EP2RC, VQ8AI, and heard TN8AF on both paths. QSLs rcd.: OX3BZ, VP2MV, VQ8AI, LH4C, etc. Frank now has a 7 Mc. D.X.C.C. score of 128.

Ken VK3TL had a good month working the long path mostly between 0700-0800 hrs. GMT. His list is: CP1BH, CR8AA, CX2CO, EI8P, GD3GMH, LA5FI, TF2WHB, TI2SS, VQ4ERR, 5A1TW and 9N1ME on s.s.b. On c.w. EI5AJ, FR7ZF, FR7ZC/J (San Juan), ON5AX, HS1M, ZB2I, CE3IW, IT1TAI, ZK1AA, ZK2AB, UJ-8AF, UR2KAN and many other Europeans.

Rick VK3ARX now has W.A.S. and a W.P.X. of 310. He has worked 55 countries in the first two months of this year without chasing 'em. His latest good ones are: W9WNV/KG6R, FR7ZC/J, TF2WHB, FH8CE (1200z Comoro Is.), GW3CW (1330z), ZS3EW (0940z), VK0NL, and more. Rick ran second in the last VK-ZL in the 14 Mc. c.w. section. (Nice work OM.)

Eric BERS195 hasn't listened much of late but netted these. 3.5 Mc.: W2KQT (1145), W2PEO (1130). 7 Mc.: BY1PK (2015), HC5CN (1130), HK3RQ (0715), HM2BD (1200), 5BF (1330), KR6BQ (1350), UC2BW (1920), UD-6KAS (1955), UF6CW (1920), UI8CC (1930), UP2KNP (1915), UR2KAB (1920), VE1QN (1150), VE5CBV (1155), VK7CH/MM (0330), VQ4IV (2030), VS9AJA (2000), 9APB (1915), 4X4QA (2000). 14 Mc. phone: VK9YT (1150). 14 Mc. c.w.: DU1OR (1015), HL9KB (1115), HP1IE (1200), KV4CI (1145), UA2AC (1250), UC2WE (1315), UQ2KAE (1245), UM8KAA (1150), VQ8BT (1220), VR2EH (0345), 4S7WP (1150), VS6EC (1055), 9MB (1220), 9M2UF (1110), SM4CNI/MM (1120), ZL2BAH/MM. QSLs rcd.: KR6AU, OA4FM, UC2AF, UD6BD, UL7KAD, UR2KAG, VK8KK/P, ZB1BX, VK-0VK, VK2AZX/Mobile. All above times GMT.

Leigh VK4RH QSOed on s.s.b. the following, mostly short path around 1300z: 14 Mc.: KA-2RB, KR6CM, DU1AC, KG6SE, G3NNT, G6XN, G6RH, G3DOG, G2CJN, G3NFV, G8FC, GI4RY, G8PO, UA1DK, UA2AO, ON4UN, DL2OX, DJ-1BZ, DL3LL, F8KR, F9FH, SM5RM, SV1AR, SV0WN, DL0IB, DL8DX, PA0AJP, OH2RM, OH2ER/OH9 (Lapland, 1007z), F9LI, G3RTB. 21 Mc.: K7RJK, W4ZGH, W6AOM.

WANTED URGENTLY

A Sub-Editor to compile the DX page of "A.R." Fuller details obtainable from Editor "A.R." or Alan Shawsmith, VK4SS.

Peter L6021 heard these. 15 mx a.m.: CR7GJ, DU1MR, DU6RG, FR7ZD, G3GYH, HK3AFB, HK3YF, HL9KH, JA, OH5NQ, UB5LV, VS1GZ, VS4RS, VU2WM, XW8AL, ZE2JA, ZE2KL, ZE-7JO, ZL2UD, ZS1FA, ZS1V, ZS5BK, ZS6ATF, ZS6CY, 4S7BR, 4S7GE. 9M2FK, 9M2RI. 15 mx s.s.b.: HL9KH, JA1FSL, JA2AEY, VK9LA (Cocos), ZS6AJH. 15 mx c.w.: JA, UA0KFG, VK9LA (Cocos), VS1GZ. 20 mx a.m.: JA-7AMH. 20 mx s.s.b.: VS9MB. 40 mx a.m.: DU1AS, DU1CE, DU1MR, DU9FB, ZL2AAW, ZL3BL. 40 mx s.s.b.: DU7GB, G3AOO, JA-2BAY, KC4USN, KL7DTB/W6, LA6CF/M, VP-3HAG, Ws, ZK1BS, ZL3ID. 40 mx c.w.: DJ2RF, DJ5GC, DJ6DO, DJ0FX, DL7AA, DM2AUG, DM4BM, FB8ZZ, G3PDL, HB9ADF, HL9KH, HM1BP, HM5BF, Js, JA6AHY/MM, KG6NAA, KH6IJ, LA6CF/M, LZ2KBA, OK2OP, SP5ARN, SP7HX, SP8AAH, SP9EC, SL8AY, SM3CAE/MM, UA1DQ, UA3KWB, UA4AE, UA9DT, UA-0KDA, UB5AC, UB5JJ, UO5GW, VE3VL, VS-1FZ, VS4RS, W1-0, WN4KNF, WN6CKV, WN6DNA, YO5KAU, YO7VF, YU1EN, ZB1BX, ZL1HY, ZL2GS, 4X4BT, 4X4RX. 80 mx c.w.: Ws, ZL1AXB, ZL1GQ. 80 mx a.m.: ZL1AXB. 80 mx s.s.b.: W1-7, LA6CF/M, ZL2APC, ZL-4LM, ZL4OD.

John VK2ZR worked these on 14 Mc. c.w.: DJ8GN, DU1OR, FW7DW, G3VW, GI5UR, GW3OSS, JA6CE, KA2KS, KH6BBT, KL7RZ, KR8AP, LA8SG, LU5AQ, OH3UO, ON4QV, OK1XJ, OZ5D, PA0JPC, SM5EC, SP5ALG, UA3WA, UA0KQB, UB5KBB, UC2AW, UD-6KAF, VR2EK, VS1LD.

Bev VK4BL managed these choice few. 14 Mc. wkd.: DJ5JI, HM1AB, HS1M, HS3PD, I1IF, Js, KA2RD, KG6NAA, KL7MF, KR6CJ, SM3YF/MM, SP8HR, UAs, UI8CR, UP2AG, UQ2KAE, UT5RB, UW3RY, ZL2BAH/MM. 14 Mc. c.w. hrd.: BV1USF, DJ4XR, DL4BV, DM-2AZM, F3NB, FK8BC, G3PFB, HA7LF, HB-9VW, HL9TF, JT1KAA, KA2GF, KP4BHY, LU-6FA, LZ1SP, OE1WT, OH2ZL, OZ3FF, PA0EF, SP6WM, ST2AR, UD6KAF, UP2KC, UR2KAN, VK9LA, VS9MB, XE1AD, YO9IA, YV6AX, 4S7EC, 5A3CR, 5B4KG, 9M2UF.

Graham VK2AGH has been picking the eyes out of the DX with the following. 14 Mc. c.w.: JT1KAA, 6O1ND, PZ1AH, HK0ZU, ZS5QU, ST2AR, GI3NPP, UA2KAG, LH4C, ZS6J, OD-5AX, VQ4GT, ZL1ABZ, IT1GY, VK9LA, ZS-2MI, LA6CF/M, 5B4TC, FW8DW, FR7ZC/J, W9WNV/KG6R, VP8GQ, FB8YY, ZE8JJ, ZS-3EW, VK0NL (Heard Is.). 7 Mc. c.w.: HK0ZV, W9WNV/KG6, UA0LA, ZL1ABZ, ZE7JO, FW-8DW, VS1GZ, VR5CA. QSLs rcd.: LH4C, ZD9AM, 9U5ZZ, HK0ZU, CR5SP. Graham has the really fine total of 294 countries worked.

Bob VK6RE worked on 21 Mc. s.s.b. and a.m.: ET3JK, FR7ZD, 5H3HZ, CR7GJ, 5R8AA, 5R8AG, VS9MB, ZE2JA, 5B4TJ, UA9VH, I1VIT, VQ-2JV, HL9KH, many ZLs and JAs.

Yours truly (VK4SS) worked, c.w. 3.5 Mc.: W9ADN, W9WNV/KG6R (Rota), KH6EGL/KM6. 7 Mc. c.w.: W9WNV/KG6R, 5B4KG, 5A2TS, I1HM, BV1USF, VS9AAA, CM2BB, ZS6FN, ZL4JF (Campbell Is.), ZS6KO, FG7XC, YV-5BX, FB8ZZ, UC2WE, ZL1ABZ (Kermadecs), VE8DX. 14 Mc. c.w.: VP5GT (Grand Turk Is.), VK9RH (Norfolk), GW3AQV, VP6LJ, W9WNV/KG6R. 21 Mc. c.w.: VS1FJ, KR6DD, ZK1AR, KR6ML, W9WNV/KG6R.

ADDRESSES

FK8AZ (ex FU8AE)—Louis Chaumont, Box 104, Noumea.
OX3KW—Kai Thomsen, Frederikshab, Greenland.
PJ2ME—Via W2CTN.
VR2EO—Via W8EWS.

Following are some Russian district QSL Bureaux:—

UI8—Tashkent, Levanevskogo 39, Radio Club; Fergana, Lenina 28, Radio Club; Samarkand, Vojkova 4, Radio Club.
UJ8—Tadjik S.S.R., Stalinabad, Ordjonikidze 8, Radio Club; Tadjik S.S.R., Leninabad, Park Kulturi i otdiha, Radio Club.
UH8—Turkmen S.S.R., Ashjhabad, Frunze 18, Radio Club; Turkmen S.S.R., Chardton, L. Tolstogo 28A, Radio Club.
UM8—Kirgiz S.S.R., Frunze, ul. Frunze 114, Radio Club.
UD6—Azerbaijan S.S.R., Baku, Shezorsa 191, Radio Club.
UF6—Georgian S.S.R., Tbilisi, Nico-Nicoladzhe 7, Radio Club; Georgian S.S.R., Batumi, Rosa Luxembourg 24, Radio Club; Georgian S.S.R., Kutaishi, Pushkina 18, Radio Club.
UG6—Armenian S.S.R., Erevan, Terjan str 73, Radio Club.
UL7—Kazakh S.S.R., Alma-Ata, Tokmanskaja 79, Radio Club; Chimkent, Tabaeva 6, Radio Club; Ust-Kamenogrsk, kv b, Gogolja 38, Radio Club; Petrovalovsk, Ritskaja 12, Radio Club; Akmolinsk, Kirova 27, Radio Club.
UO5—Moldavian S.S.R., Kishinev, Podolskaja 35, Radio Club.
UN1—Karelskaja A.S.S.R., Petrozavodsk, Gercena 45, Radio Club.
UR2—Estonian A.S.S.R., Tallin, Lai 1, Radio Club.
UQ2—Latvian S.S.R., Vilnus, Stuska-Gucjavichusa 9, Radio Club; Kaunas, Musejnaja 5, Radio Club.

SUMMARY

Bram VK5AB: Re Willis Island. Supply boat S.S. Cape Leewin, departs for Willis Island from Cairns, 15th June. Bram may be on it. Every DXer hopes he makes it.

A get well wish to Lew Sharply, W1A-L4020, who will be hospitalised for a while. Lew always has tried to help with any DX information for this column.

My thanks as always to the regular contributors: Edrs. WA6TGY, W4CKB, G2BVN, SL3ZO, W2DEC. Free-lancers VK2QL, VK-2AGH, VK2ZR, VK3ARX, VK3TL, VK4RH, VK4BL and S.w.l's. BERS195, L6021, L4020 and Leo Tully who tapes any choice DX bits.

73, Al, VK4SS.

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Sub Editor: J. M. (Mac) HILLIARD, WIA-L3074
57 Gardenia Street, Blackburn, Victoria
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

Our third S.w.l. Convention will be over by the time you read this. This is one week-end of the year when we have a chance to get acquainted with our fellow members. A report of the Convention will be given in next issue of "A.R."

It is pleasing to see so many of you joining our ranks these days. For undoubtedly many of you will be the Amateurs of tomorrow. We will give you all the encouragement that we can, and do not be frightened to ask any questions you may have on your mind.

We would like to see more of you in the Contests that are run. Apart from the R.D. Contest, very little support is given to the other Contests which are run. All the Contests that are run by the W.I.A. do have a receiving section. So how about it—give it some thought.

NEW SOUTH WALES

Chas. L2211 has the destinction of being the first S.w.l. to have received the ZL H.A.D. award, which is confirmation of having QSLs from all ZL call districts on 50 Mc. Congrats., Chas., that is indeed a very fine effogrt.

Chas. has received the following awards: 1960 R.D., 1961 R.D., 1962 R.D., Ross Hull awards for years 60-61 and 61-62, the Elizabeth award for 62 and 63. That certainly is good record Chas., and it will certainly take some beating. Chas has reported six orbits of Oscar II. that he heard last year.

Don L2022 reports that it has been too hot of recent months to spend much time in the shack. However Don has had the occasional listen. And despite a number of reasons, Don is hoping for a good year on the bands.

Yes Don, the Ladder seems to remain much the same. However this Cox man is going to cause some changes for one, and I can see a few more changes before long.

VICTORIA

Fifteen members were present at the March meeting. Main discussion of the evening concerned our S.w.l. Convention at Ballarat. We were very pleased to welcome three new members at the meeting. They were Peter Gibson from Dandenong, John Torrington from Pascoe Vale, and John (sorry John I have forgotten your surname). We are pleased to have you and look forward to seeing you at our meetings in the future.

Maurie, our President, was not present at this meeting and as Noel was unable to act as chairman for the evening, your scribe took the chair. Ian reported that the AR7 that the VK3 Council recently made available to us was now undergoing repairs. At the conclusion of the meeting we retired to inspect 3WI, per courtesy of Ken 3ACS. We finally rounded off the evening and dispersed to our respective QTHs.

In reply to the Editor re the 50 Mc. award for hearing all States, your scribe has been lucky enough to have verified all States.

Michael L3133 comes forth with a very interesting letter. At the moment he is using a 108 set having just recently constructed a power supply for it. Aerial is a half wave long wire 40 ft. high. Michael is considering constructing a six-tube superregen. set. He is lending his set to his YL who is becoming interested in Amateur Radio. Many thanks for your letter Michael, and look forward to hearing from you again.

Eric L3042 gained first place in the VK-ZL Contest with the fine score of 8195 points. Congrats. Eric on a very good effort. However he is bemoaning the fact that the Contest receives such poor support from VK S.w.l's. Yes Eric, it is a very poor show that they are so poorly supported by our members. So how about it chaps, give some of these Contests a go.

Our congratulations go to Jeff L3075 for having received his full call which is 3AQL. We hope that even though you have your ticket Jeff, that we will still see you at some of our meetings in the future.

Your scribe has been busy brushing up on c.w. of late, but has found time to send out a few reports all the same. Must keep in front of this Cox man. And that is going to take some effort.

Greg L3138, who is one of our newcomers, has sent out 250 reports this year. That is certainly good going Greg, let's hope that you get a good response to them. Greg intends to erect a beam in the near future. Then there will be no holding you Greg. Bob Hovey, another newcomer, and whom we welcome to the fold, sends along a very impressive photograph of his "rig". Thanks very much Bob, you certainly have a very nice set up. We hope that we will see your name on the DX Ladder before long.

Noel L3101 comes forth with another very interesting letter telling of his activities. Recently he had a visit from Peter Saunders L5035. Peter is in the Navy and is stationed at Flinders Naval Base and comes up to Sunshine at week-ends. While at Noel's place he had a good tune over the bands. If you can ever make it to one of our meetings Peter we will be very pleased to see you.

At present Noel is on the bands nearly every night until 9 p.m. When he finds 14 Mc. dead of a night he goes to either 3.5 or 7 Mc. for a while. The other day Noel received a very nice letter from Richard Mills, who is a keen S.w.l. and he lives in New York. He is very keen to correspond with S.w.l's. in VK. Richard is 15 years of age and he is going for his novice ticket very soon. His address is 418 East 9th St., New York, N.Y., U.S.A. So I hope that some of you may care to drop him a line. I for one have written to him.

QUEENSLAND

Ross L2233/VK4 comes to the party this month with a note telling of his activities. Very pleased to hear from you Ross. He recently burned his fingers with ZLs, DLs, JAs, XZ2 and FK8. He has a small rhombic up 50 ft. and the QTH is 3,500 ft. above sea level. Ross is keen to obtain a W call book—around the years of 1954-55. Any takers. We look forward to having you with us Ross once more. Ross was in VK3 about six months ago.

WESTERN AUSTRALIA

Peter L6021 continues to keep VK6 on the map as regards S.w.l. activities in that State. At present Peter is hearing a lot of DX on 7 Mc. c.w. and has received cards from the following: GI6TK, KR6NX, JA1EFE, UG6AW, ZL4JF and VS1FJ. You are certainly doing well Peter with the DX. He recently received a number of awards that he has won in a number of contests. These include two R.D. Contest awards, a N.F.D. award and a VK-ZL award. Nice work Peter old boy.

Peter continues to climb the DX Ladder and is very keen to catch up to Maurie. The way you are going, you will soon be up to him. Thank you for all the dope that you sent over. Peter may visit VK3 later in the year. We will be pleased to see you OM if you can make it. See you all next month, 73, Mac Hilliard.

DX LADDER

	Countries		Zns.	S.s.b.		W
	Conf.	Hrd.	Conf.	Conf.	Hrd.	Stat.
E. Trebilcock	277	285	40	—	—	50
D. Grantley	112	257	38	20	101	35
A. Westcott	86	159	31	9	107	11
M. Hilliard	71	223	33	18	149	11
M. Cox	68	223	29	35	149	18
P. Drew	54	195	25	21	112	9
C. Aberneathy	47	95	28	—	—	14
N. Harrison	42	115	28	3	16	30
D. Coggin	9	86	6	2	55	12
G. Earl	4	70	4	1	33	—

YOUTH RADIO CLUBS

Some good news from VK3 this month! 3TL is going to handle Y.R.C. matters in Victoria. With Divisional backing for him, there could be great expansion in that State. Congrats. to Morwell High School on having a Y.R.C.—they want contacts for 3ANL every Thursday from 4 to 5 p.m. on 3.65 Mc.

To be constructive, I should say something about this support at Division level. I have great respect for those who put some of their valuable spare time into Division administration, so I don't suggest they take on an extra load in actually looking after a Y.R.C. Divisional backing for the Y.R.C. co-ordinator should include as many other forms of support as can be managed with the Division finance and facilities. Typing and duplicating assistance should be paid for or sought. Appeals for donations of equipment can be made through bulletins and broadcasts. A negotiator should approach the Education Department for official approval, summer schools, finance. publication of information, and so on. Wide search should be made for some who would build simple models to help Y.R.C. leaders. Suitable disposal oddments could be passed on to a Y.R.C. The authority of the Division should be used to approach branches of Rotary, Apex, Lions, J.C., etc. A Divisional letter to all manufacturers, distributors and repairers of electronic equipment could gather some of the tons of usable "rubbish" which they destroy regularly.

The April "A.R." Federal Comment on Novice licences should be carefully read by all Amateurs interested in their frequencies and supported by all Divisions. The urgently needed expansion in our numbers is only likely to come from recruiting the young ones. Specially note that this rapid growth among the young ones has only occurred in the countries which directly encouraged their youth with opportunities, through a restricted licence, to experience the excitement of operating a transmitter. The so-called "fear" in our officials over the safety of youths operating a receiver and 10w. transmitter is made to look ridiculous by the experience of other countries and, incidentally, by the competence and technical knowledge of hundreds of boys I have personally seen in the 12-16 age group. They are nearly always far safer than their parents.

An item from VK4. Father A. Yelds, Club Leader at Sacred Heart College, Toowoomba, has eight boys for the Elementary Certificate examination. This is the first batch of candidates from VK4 and results are awaited with interest.

Various moves are under way with regard to Boy Scouts' Association and Australia Air League. No details are available yet but note that Rover Scouts have a Project Badge which involves six months' study in some field of interest. Amateurs should contact their locals and suggest A.O.C.P., which is not only a worthy object in itself, but could lead to further development of Scout Radio Clubs with their own Amateur Stations, and opens up wide possibilities for inter-group communication, not to mention field days.

Much activity in VK2, as usual. Recent new clubs are Narwee Boys' High and Sydney Tech. High. At Narwee, the science master, Mr. W. Sites, is leader and instructor. Formation of the Tech. High Club is due to the energy of Ian Burns, who transferred from Rex Black's club at Kingsgrove High (2AVV). On Saturday, 30th March, at Narwee Boys' High Fete, Rex (2YA) operated a base station and 2RX and 2ABA worked mobile—a fine talking point for fete visitors.

Doug Williamson, a teacher at Bass Hill High, is now to handle all Elementary Certificate matters—that is a great help for you, Rex. A new Boy Scout Radio Club is on the way in Auburn with Jim 2AMQ as instructor. An AT5 tx from the estate of the late 2JP has been reserved for their station. Tony Shannon, former enthusiastic club leader at St. Leo's College, Wahroonga, is now teaching at London Academy (England), but no youth radio club yet! Many thanks to Reg 2ZMR for his donation of a Philips No. 4 and a No. 11 transceiver to the Youth Radio scheme, probably for use at Narwee and Sefton High Schools. We can use any amount of such gear, up as far as slightly used KWM2s! Two good Junior Certificates and one Elementary at Patrician Brothers' School, Liverpool. Dick Harnett, of O.T.C., is one of a group of instructors. Club station is 2KL, usually on the air on Saturday afternoons. Roger 2AIU at Inverell High School, reports good progress and a good group sitting for certificates.

That's all for now—but where is the news from the Divisions in VK4, 5 and 6? Can they really try to find an enthusiast for Y.R.C. co-ordinator and then support him? Slightly (very slightly!) sorry to be persistent, but this is important for all of us.

73, de Ken 1KM.

FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

The R.S.G.B. QSL Bureau will be closed between 23rd May and 10th June. They request no despatches to arrive during this period.

The Association of Amateur Radio of Morocco is sponsoring a Contest to be held during the Casablanca International Fair, which will be held between 25th April and 11th May. The Association will have an official station on the air daily from the Fair under the call sign CN8MC. This station will transmit alternately on 7 Mc. 1400/1600z and on 14 Mc. 1600/2200z.

The QSL Bureau of the International Short Wave League (I.S.W.L.) has changed its address to 7 Parkside Gardens, East Barnet, Herts, England. G3LPF continues to be QSL Manager.

G3MTB, Beeley Parish, of 2a Pasture Road, Barton on Humber, Lincs, England, complains of non receipt of QSLs from the following VK stations: VK3OZ (1958), VK3AQL (1959, two QSOs), VK3AZY (1960, three QSOs), VK-3ASA (1960) and VK7RX (1960). He has not yet received one VK card!

In the QSL year ended February 1963, this Bureau handled 47,578 cards as against 44,539 in the previous year and 43,524 in 1961. This was the heaviest year since 1950. Despite the increased handling, costs remained substantially unchanged.

—Ray Jones, VK3RJ, Manager.

— • • • —

NEW SOUTH WALES

The Annual General Meeting was held at Wireless Institute Centre on Friday, 22nd March, over 100 members being present. The meeting was opened by the President, Max 2MP and the minutes of the last Annual Meeting were read by Ted 2ACD.

Barry Cartwright, acting for our Auditor (Jim 2PM, who is overseas), then read and presented the Auditor's report and balance sheet for the year 1962. Chas 2CO moved a vote of thanks to Jim and his staff for the good work in preparing and presenting the Auditor's report and balance sheet. Jim 2PM was then re-elected Auditor for 1963.

During the discussion on the balance sheet, Warwick Johnston supervised the ballot for the election of Council and the following were declared elected:

John Birdsall, 2QJ; Vic Cole, 2VL; Kev Collins, 2ANY; Roy Parton, 2KO; Gerry Sabin, 2AGS; Sid Ward, 2SW; Wal Webster, 2EW.

Pierce Healy, 2APQ, Federal Councillor, then reported on the final arrangements for the coming Easter Federal Convention.

The general monthly meeting was held on Friday, 22nd March, and the lecture for the evening was "V.h.f. Radio and Its Use in Upper Atmosphere Research" by Les 2ZBJ, of the C.S.I.R.O. Station at Camden. Les gave an interesting talk on the use of radio in measuring various phenomena in the ionosphere and tracking the multitude of Sputniks that are flying around in space. An interesting part was the use of satellite transmissions, theirs and ours, to observe variations in the ionosphere, truly a good labour saving device.

The first Council meeting for 1963 was held at Wireless Institute centre on Thursday, 28th March, and 18 members turned up to see the new Council off to a good start.

The following officers were elected: President, Vic Cole, 2VL; Senior Vice-Pres., John Birdsall, 2QJ; Junior Vice-Pres., Gerry Sabin, 2AGS; Secretary, Bill Storer, 2EG; Minute Secretary, Kev Collins, 2ANY; Communications Officer, Roy Parton, 2KO; Education Officer, John Birdsall, 2QJ; A.O.P.C., Instructor, Cec. Bardwell, 2IR; QSL Officer, Frank Hine, 2QL; Publications Officer, Wal Webster, 2EW; Bulletin Editors, Gerry Sabin, 2AGS, and Warwick Johnston; Country Liaison Officer, Frank Pearson, 2ACQ; Disposals Committee: Dr. K. King, 2ABK, Vol Molesworth, 2VO, Ken Squires 2SD; Youth Training Scheme Committee: Chairman, Harold Burtoft, 2AAH, Supervisor, Rex Black, 2YA, Liaison Officer, John Birdsall, 2QJ.

On behalf of the Council I would like to thank the members of the W.I.A. for their support and hope that 1963 will be a bigger and better year for the Institute. 73, 2VL.

HUNTER BRANCH

Contrary to expectations, the March meeting of the Branch was not the rowdy affair that had been predicted. Other than occasional shout of "Shame" and "What about a secret ballot?" things were very quiet. So quiet indeed that one office-bearer didn't even know that he'd been elected until he heard his name read out with the others at the Sunday morning broadcast! Vic 2VL, our new Divisional President, conducted the election which resulted as follows:—

Les 2RJ, President; Lionel 2CS, Vice-Pres.; Keith 2AKX, Junior Vice-Pres.; Bill 2XT, Hon. Treasurer; Gordon 2ZSG, Hon. Secretary; Keith 2AKX, Zone Correspondent; John 2ZJC, Social Sec.; Kev 2ZKW, Social Treasurer; Stan 2AYL, QSL Officer; Stuart 2AYF, V.h.f. Liaison Officer.

Stuart 2AYF gave a very full report of the year's activities in his position as retiring President and Les 2RJ gave a short speech as he took over the position. It is expected that Stuart's report will be published in full in the Bulletin.

Because of the coincidence of Easter with the meeting week-end in April, it was necessary to put forward by one week the meeting night. Since there is no reason why this should not be a regular thing, it has been unanimously decided by members present at the April meeting that as from May, 1963, monthly meetings shall be held on the First Friday of each month, excepting January, when no meeting is held. This also means that copy of the proceedings of the meeting will be available to be published in the following month's "A.R."

The April meeting also set a record for attendance, and looking through the records, I find it is over ten years since there has been such a large attendance at a monthly meeting. Forty-eight were present, including twenty-six licensed Amateurs, to hear seven lecturers describe gear that they had built. Those taking part in the "Do It Yourself" night were, Bill 2ZWM—Amateur-band converter, Bob 2EY—two metre converter, Kev 2ZKW—tuneable two metre converter, Lionel 2CS—receiver for Amateur bands, Des 2ZDN—two metre transceiver for mobile, Les 2RJ—a two metre yagi, and Keith 2AKX—transistor phase shift osc.

Several duplicated sheets were distributed during the evening and the chalkboard was filled several times with diagrams and the like so that all attending went away with many new ideas.

Lucky Lionel, as he is known, is going away for a seven-month world tour at the end of the month and members want to be sure that he takes lots of colour pictures to show us on his return. Bill 2XT, on behalf of us all, presented him with a large transparency storage box in which to keep the pictures. Good luck, Lionel, but don't forget to buy lots of film.

One of our April meeting lecturers, Bob 2EY, is active on both 144 and 7 Mc. and I heard 2WI giving him a 5 and 9 report. Bob has a converter with a brass handle on it and those who were at the meeting will have seen the strange machine, but to most it still remains a mystery. Kev 2ZKW is mainly employed at the present on his Philips No. 4 rx and his now famous tuneable converter. While in the wilds of Maitland it is pleasing to note that Vic 2AKP is recovering from his recent illness and may soon be back on the air with greater vigour than ever. Bob 2AQR has returned from holidays at his country seat and boy, must that be some seat. One of the chaps at the meeting told him he was losing weight and Bob was quite put out—no wonder there was a shortage of chairs.

It was good to see Neil 2ZCU back on deck again after his recent car accident. There is a rumour that he has a 2 metre rig in one of his crutches and that could account for his care in standing them up, but anyway he's back, so let's hear you on the air soon Neil. I am very hurt to know that I have been wrongly reported as saying that Harold 2AHA and Jim 2ZC were on two metres. In fact they are on 1410 and putting in a massive signal to all locations in the Branch area. Bill 2XT probably will not be able to call in on Monday nights again when the law about the alehouses becomes law. Because, you see, he'll be working between 6.30 and 7.30 and the DX will have to wait. He has been amongst some rare ones lately and the new rx is really worth the money Bill says. If you are one of those rich types like Stuart 2AYF then you will have installed a t.v. set as a monitor for your 50 megs contacts. Of course if it happens to be the home t.v. set and the XYL is watching a programme that's a different matter. I believe Mrs. 2AYF still feeds that nasty man who wrecks all the programmes.

The Hon. Member for Stockton, Ron 2ASJ, and his partner in earbashing, Jack, are still hard at it on both 7 Mc. and 144 Mc. on Tuesday afternoons before 4 to avoid trespassing on Indian territory. Ern 2FP has been very busy with hammer and nails and the result is—you've guessed—a new shack. Doctor Bill, or 2ZK to you other people, is a real live doctor now since that ceremony held at the University recently and he has been having some trouble with modulation—whether as a cause or an effect no one is sure, but one thing is certain, he's not forgotten the sign language developed by Samuel from the U.S.A.

Each night I pass Bill 2ZL's place I see a light in the shack but I seldom hear the signals. This is because Bill is working on his "Do It Yourself Flood Rescue Kit" which has been field tested in his front garden. Following the recent wet weather things were very damp at Phenyl Bay and little work was done on the railroad. Another Bill 2ZWM is active on 2 mx but claims he cannot be heard and yet another Bill 2ZCV, the Cessnock villain, has now his call and is active beaming signals towards Newcastle. While in the Cessnock area, it is interesting to see the young lads investing in fine quality motor vehicles. I refer to that high class piece of rubbish recently purchased by Chris' lads. Still there's a reason for this—Sherwood has become such a menace in the firm's trucks that they've had to persuade him to ride instead of drive. And to think that his explanation to the officer of the law as, "That other bloke failed to give way to a vehicle on his left!" Chris himself is trying hard to explain the article seen in a 1948 copy of "A.R." which told of that gentleman shortly to become active on 7 megs. That was then and this is 1963 and I'll leave you, kind reader, to think what you will. No, he isn't.

It appears that Rodney 2CN was glad to get back home after his recent trip to the sunny southern States. It was because he was anxious to screen the 600 feet of colour film taken on the trip and to read all the radio books he had bought. One of them told him how to build a 2 mx long tom and so now he has one—10 elements long. Gordon was unable to rebroadcast the news on 2ZSG the other night when he lost grid drive. The trouble apparently stemmed from having a nought too much on the coupling capacitor (1,000 instead of 100 pF.). Gordon never realised before that nothing could be so important. Harry 2AFA is being stirred into activity by the article on the 10w. tx recently described in "R. & H." Yes, I believe we may hear him on soon. If he doesn't hurry up his grandson Stephen will beat him there.

Nobody has yet claimed Belmont Bob's grey box, so he has withdrawn it from sale. He and Ross are specialists on the colour code now—you just ask them. At last Allen Legge has been persuaded to attend a meeting and we even got the Oosterveen brothers along. Max has a new super building project in hand for a lakeside Amateur which could mean a benefit for all—the secret, no I'm not saying. No more will we hear loud morse signals from Marmong. They are all going to build transistor oscillators now that the junior member has shamed them into it. Les 2RJ is still on QRO with 200—milliwatts, and says the beam is the reason for the signal strength. "If the t.v. stations can do so, I can," says Les, and out by the lake 2AWX is still on 12 watts but if you'd like to hear the melodious tones of the two Monday night announcers then tune 3596 or 144.7 at 7 p.m. and there we'll be with the broadcast.

And please don't forget the next meeting will be on the first Friday of May—that's the 3rd. at the Newcastle University College, Tighes Hill. What about making it another record? See you there, 73, 2AKX.

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VICTORIA

Council meetings were held on the 12th and 27th March. On the 12th, Council spent considerable time discussing the facilities at the rooms and decided to dispose of the existing chairs and instal modern tubular steel equipment. This equipment should be installed before this is in print. Proposals are also being considered to make structural alterations to give better kitchen facilities. Council received several comprehensive reports of illegal transmissions. The secretary was able to report that the offender on 7.011 had been found and his equipment confiscated. Federal Councillor reported that F.E. had wished to cancel the Easter Convention due to lack of agenda items but as this Division considered there was unfinished business from the last Convention, voted that the Convention be held. Several items for the Federal Convention agenda were discussed and will be the basis of motions from this Division.

Due to the pressure of studies, Alan 3AEL tendered his resignation as Federal Councillor and from Divisional Council. Michael 3ZEO has been appointed Federal Councillor and John Battrick co-opted to Council to fill the position of Secretary, and John Pritchard as Assistant Secretary. Applications from fourteen new members were received and subject to the approval of the next general meeting, will be accepted into this Division.

The Kinnear trophy was awarded to the North Eastern Zone and would normally have been presented at the State Convention. However the trophy is undergoing repairs, and it will be sent on to the zone as soon as possible.

And that is a summary of four foolscap pages of notes and four hours of discussion. Nobody can accuse me of "padding" like one scribe I know.

As for the Council meeting on the 27th, I have practically no notes at all. We welcomed our two co-opted members and had them working before they had time to say "hello". No doubt the short space of time since the previous meeting restricted the amount of business to be handled. Incidentally, Council meetings will be held on the fourth Wednesday in the month from now on. Much of the evening was spent again discussing ways and means of increasing interest in the affairs of the Institute, and attendance at general meetings. Several new suggestions were brought forward and these will be considered more fully by the incoming Council. One thought was to make more use of the rooms and a proposal will be placed before members at the April general meeting. See what a bit of new blood can do.

There is a proposal before Council that the broadcasts should also be transmitted on six metres. This can be done provided our t.v.i. problem can be cleaned up. To this end, two councillors have undertaken to investigate the problem and see what steps can be taken to overcome it. Talking of cleaning up. The appearance of the rooms is the cause of some concern and it looks as though steps will have to be taken to hire somebody to come in periodically to give the premises a thorough cleaning. In the meantime it is suggested that every group using the rooms appoint one or more of their members to empty the ash trays and run a broom over the floor before they lock up for the night. Every little helps fellows, so what about it? Two or three members are already doing more than a fair share of this work during the day, and we thank them for their efforts. Only those who are at the rooms at regular intervals realise the number of odd jobs they do.

A further seven applications for membership were received and these will also be submitted to the April general meeting for approval. This total of 24 for one month is most pleasing and we can only hope that we have the opportunity of meeting them all in person.

I shall leave the reporting of the State Convention to the N.E. Zone scribe, and only report that the count was 125 present, including XYLs and harmonics. The "sick parade" on Sunday consisted only of those with self inflicted wounds, so no sympathy will be wasted on them.

April general meeting. About 30 members attended the April meeting to hear Alan 3AKZ give an interesting talk on his visit to W land. Alan illustrated his talk with some really excellent colour slides. It may be that there is Amateur Radio in the States, but Alan had very little to say about it. Once Alan had finished, the Federal Councillor read the 30 odd agenda items to be discussed at the Federal Convention. These started several lively discussions and there was some divergence of opinion as to how this Division should vote. These matters were settled by a show of hands and the majority rules, that is assuming that those present truly can represent the total VK3 membership. After all this business had been dealt with the Council recommendation to use the rooms at 478 for the May meeting came up. After discussion, when somebody pointed out it was impossible at such a late date to change the venue of the Annual meeting, it was decided that the **June** meeting will be held at 478, and the **May** meeting will be held as usual at R.M.I.T.

The June meeting will be in the nature of an experiment. We will have a normal agenda item and arrangements will be made for a "cuppa" to be available after the meeting. As there is no prohibition on smoking at 478, those who wish may smoke their heads off. A further point is that there is ample parking space available in Victoria Parade. Those who have free passes on the Victorian Railways go to North Richmond station and either take a tram or walk west along Victoria Parade.

Now to attack my old sparring partner. He has made this Division a backhanded compliment by praising our weekly broadcast, but I suspect an ulterior motive. He is only taking out an insurance policy to cover his holiday in VK3. So far as I know he has not been sighted in the Melbourne area and I for one doubt that he will get this far. After all, the poor old chap only drives at 25 m.p.h., and at that speed it would take a month of Sundays for him to do the round trip. With those few remarks, I'll leave Pansy in peace, as I feel he has his hands full defending himself from the big boys in VK4.

No personal news has been gleaned this month so we now go into the Zone notes.

NORTH EASTERN ZONE

One by one members of this Zone are turning to 2 mx. Most recent is 3ZJH with 65w. using 829. After numerous embarrassments like shorting electros, malfunctioning relays and low emission converter tubes, he finally made contact with two locals. 3ASF has, I understand, completed his modulated light tx but problems abound, like persuading cohert 3ZHO to get on with his outfit as agreed originally. 3AYD rebuilt the tx and is now using a 6DQ6 for 40w. 3AWT had a spot of bother with welded fils. and cathodes on 2 mx unit.

3VL heard working portable from Melbourne. At the time (late March) he was about due to enter hospital down there. 3KU and lady returned from a recent holiday in the Apple Isle and both sounded cheery about it. Bert heard hic-coughing in the background (in a gentlemanly way, of course). Said something about Peg giving him a cuckoo clock for Xmas. This cuckoo can't hiccough as there's no cuckoo in it.

3AUL reported to be looking for a full length mirror so he can inspect himself before departing to carry out the duties of Group Scoutmaster, Umpteenth Smoko Group. Good old Grump; cold in them thar hills for shorts, though!

Inertia has set in re the possibility of forming a youth radio club at Shepparton. Too bad somebody does not actually do something definite about it. Recently built up my fourth tx. I can confidently state that this one is get-at-able for the frequent necessary checks and changes. The current project is an aerial coupler; this, coupled with the recently completed Micky Match, should indicate the customary startling conditions on aerials and lines tuned and loaded only to plate current readings.

The State Convention was held at Shepparton on 16th and 17th March. Well attended, and most visitors thought it a success. 73, 3ASY.

WESTERN ZONE

Bill Day, from Nhill, hopes to sit for the Limited ticket in April. Best of luck in the exam. I think Bill will become a 6 mx addict, if conditions stay as they were over the V.h.f. Contest period. There are one or two other chaps about Nhill who will probably sit for the ticket within a year or so. Nhill could be a real hot bed of QRM, t.v.i. and b.c.i.

Lyle 3ASA is seriously considering coming out of retirement as far as Ham Radio is concerned. Lyle has the parts for an all-band final, 80-10 mx, and a 522 suitable for 2 mx. The last few years, between repairing one-eyed monsters and parachute jumping, Amateur Radio has taken a back seat. A better spot for it is in the form of a mobile underneath the dashboard in the front seat.

I don't know what activity in the Zone has taken place on the h.f. (or d.c.) bands as I rarely listen, but several of the chaps have had quite a good time on 6 mx over the Ross Hull Contest. Stations active were Roy 3AOS, Max 3ZCW, George 3ZEA and Rodney 5ZCD. Max, I have an idea, was fortunate enough to contact VK4 on 2 mx. I had no luck, I found out my modulator did not like working as it should. Tony 5ZAI is not active on 6 mx but has a converter and dipole. He was listening on 6 mx to 5ZCD recently when a VK4 came through at 5 and 8; at 5ZCD he was 5 and 7, so a convert to 6 mx is likely, but how soon is rather indefinite.

By the time this is in print Tony 5ZAI will have walked down the aisle to the strains of the wedding march. Tony and his wife, Jill, were married on 9th Feb. in Mount Gambier. To you both we wish you all the best in your future life together. But remember, Tony, DX before dishes! and don't take too long to get on 6 mx.

Bob 3ARM has procured for himself a transceiver. This unit is well suited for portable and I hope mobile work. The rx tunes 160, 80 and 40 mx. Let's hope the tx can be coaxed to work on at least two of these bands. What about it Bob, get stuck into it with soldering iron and coil winding wire.

I have heard from one of my spies that Wilson and Brenda Edmonds, 3AFU and 3ZKN respectively are carrying out 2 mx mobile activities around the farm. What about putting up a beam? Roy 3AOS should be a f.b. contact at that distance. Rodney 5ZCD has pulled up stumps and moved to the big smoke, Melbourne. He will be in Melbourne for 18 months to 2 years studying all about crystal sets and so forth. Unfortunately he will be inactive in Melbourne as where he is staying Amateur Radio is taboo. He will have to get a chariot and put a mobile in it.

One last comment. These notes are being done on a roster system and when your turn comes, do not let your Zone down by not putting in any notes. 73, 5ZCD.

MIDLAND ZONE

In our notes last month was news of our Annual Meeting and Picnic to be held at Cairn Curran, and we hope to see a big roll up of other Zone members as well as from our own. This is not in any sense an organised radio function, the intention is to make it a picnic day for the family, but by all means bring along your portable equipment as there are some pretty good handy high spots to try out your h.f. and v.h.f. gear. There is now an excellent sealed road to the top of Mt. Tarrengower, 1840 ft. high, with an excellent view, so bring along your cameras. On Cairn Curran Reservoir you can launch your own boat and perhaps catch your own fish—as well as operating mobile marine. For those interested an inspection of the hydro generating station has been arranged.

The meeting time will be arranged so as not to interfere with the social activities. Anyone wanting to spend the week-end in Castlemaine or Maldon and requiring accommodation can ring me (Castlemaine 452) and the matter will be attended to promptly. Anyone having the time would be well rewarded by making a trip up Mt. Alexander to the A.B.C. Channel 1 and BCV8 t.v. transmitting site.

For the rest of the news, I have heard on the grape vine that 3ACN is now in his new home erecting towers and vee beams with the blessing of his XYL. My own activities have been spasmodic, mainly due to conditions. I did however have my first ever contact with fellow zone member, 3AHA on 7 Mc. Don 3ZIK, our President, has now changed his occupation, going from radio to woollens. Jim 3SV is not very active due to other commitments. Col 3FO is active on 40 and 80 mx as well as 144 Mc. Don 3ZIK is looking for contacts every Thursday evening on 144 Mc. and also active on 6 mx. I have my rx operating on 80 mx and my long-promised appearance on 80 mx will eventuate shortly. 73, 3ND.

MOORABBIN AND DISTRICT RADIO CLUB

Since last these notes appeared in this magazine, progress has been made by the club. The membership now stands at 71, which includes many juniors. This is a healthy sign and reflects the enthusiasm put into the club by members to give these juniors (many of whom have not as yet their licence) what they require from the club. Unlicensed junior members at the moment stand at 14 and they nearly all attend our meetings.

Among the activities of members, the National Field Day, of course, looms very large and we are confident that our score is amongst the top, if not the top. The State Convention at Shepparton saw many members attending, amongst whom were noted our President, Ken 3ACS and his XYL, Ron 3RN, Alf 3LC, Bob 3NZ, Hal 3ZOO (with their XYLs), and John 3OR, Keith 3AKB together with country members Bruce 3BM and last but by no means least, Arthur 3AUL. Whilst on the subject of country members, we would like to enrol more. The club facilities are always open to such and to country visitors and the satisfaction of giving a contact to DX stations to enable them to qualify for our Honorary Membership Certificate is a great draw.

Tx hunts on 80 mx still rank high in our curriculum, and our social evenings are well attended. These, together with an occasional White Elephant Night supplement funds quite

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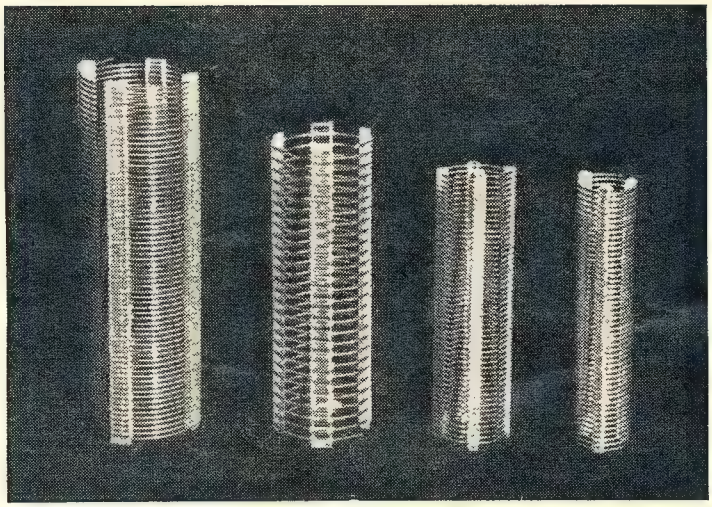

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1-16	½"	16	3"	No. 3003	5/3
2-08	⅝"	8	3"	No. 3006	6/3
2-16	⅝"	16	3"	No. 3007	6/3
3-08	¾"	8	3"	No. 3010	7/4
3-16	¾"	16	3"	No. 3011	7/4
4-08	1"	8	3"	No. 3014	8/5
4-16	1"	16	3"	No. 3015	8/5
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considerably. The attendance at monthly meetings seems to be rising too, an average of 35 or so members at each meeting!

The attractions as scheduled in our "Program of Events" for the next month include: May 3, visit by S.w.l. Group W.I.A. and club night on the air; May 17, general meeting, lecture on United Nations; May 25, social at 3ZOO; June 7, 80 mx tx hunt.

The club net on 3.6 Mc. every Monday night from 2000 hrs. still attracts many members as well as non-member stations. Any Amateur Station is welcome to join this net and a few have taken the opportunity of obtaining contacts through this medium for the Honorary Membership Certificate. Any VK station applying for this Certificate needs 14 member contacts.

As well as 3.6 Mc., many members are equipped with 145 Mc. f.m., and I list those who at present are active: Fixed base stations—3OT, 3NZ; fixed as well as mobile—3EM, 3DF, 3KE, 3CW, 3ZCB, 3ZOO; mobile only—3ARD, 3LC, 3AHZ, 3AKB, 3ACS, 3XK, 3XV, 3ZOT.

At our last general meeting a committee of four members, namely Kevin 3ARD, Alf 3LC, Wally 3AHZ and Bob 3ZRD, was chosen to act as a "publicity committee," so from now on you may note different styles of journalism, hi! 73, 3LC.

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QUEENSLAND

What's wrong with all you Queenslanders. Can't get on to any scandal, no matter how carefully I tune the various bands. And as for my spies, I'll tell you what, I'll approach the VK4 Council for an increase in your wages.

I'm not even sure whether these notes will reach Melbourne in time for printing. As mentioned in last issue of "A.R.," everything is BIG up here, including rainfall. At the present time, Ayr is isolated as far as air and road are concerned. The mighty Burdekin River is in flood and the fish are all learning to swim. So I'll have to depend on the Queensland Railway to get these notes away.

The Bundaberg Radio Club have had their Annual Meeting and the following were elected to office for the ensuing 12 months: President, Les 4XJ; Vice-President, Eric Gardner; Sec./Treas., Bill Sebbens; Publicity Officer, Merv. McGrave; Asst. Publicity Officer, Lee Downing; and A.O.C.P. Instructor, Eric Gardner.

Eric has had outstanding success as an instructor and at the last exam. the following were successful with the Limited ticket: Roy Spotswood, Lee Downing, Jim Hazzard, Bill Sebbens and Arch Lewis. They should offer some opposition to Vic 4BJ who, at the moment, is the sole inhabitant of 40 mx, and Les 4XJ, who is on most bands. Frank 4UK should be on more or less regularly, as he now has a Type 3. It used to be mine, but it changed hands for some pieces of silver and as Frank is an optometrist, and as I have been having difficulty in finding the various knobs on my rx, not to mention the trouble I could have in finding the place where I get my fortnightly pittance, although somehow I think that instinct guides me there, so as I can put out my shaking hand once a fortnight, now I've lost track of what I was saying. Oh yes, Frank also gave me a pair of spin rimmed hornicles—sporn rimmed hectacles; all right, glasses.

Wireless Institute of Australia
Victorian Division

A.O.C.P. CLASS

commences

MONDAY, 6th MAY, 1963

Theory is held on Monday evenings, and Morse and Regulations on Thursday evenings from 8 to 10 p.m.

Persons desirous of being enrolled should communicate with—

Secretary W.I.A., Victorian Division, P.O. Box 36, East Melbourne (Phone: 41-3535, 10 a.m. to 3 p.m.), or the Class Manager on either of the above evenings.

Heard Frank 4FN and Jim 4HZ going into great details over the merits of various makes of "babies' bottles". Feeling sure that some startling news would eventuate, I carefully listened and what a blow. They were going to use 'em for waterproofing mobile aerials.

Ross 4RO, Frank 4ZFA and Harold (associate member) have left for Sydney. It started to rain the following day and hasn't stopped since. Last news was that they had reached Bundaberg. Don't try to sell the Harbour Bridge to them, you Sydneysiders, because you will be wasting your time, because as I have said modestly, everything up here is BIG, and that means our Burdekin Bridge. It is the longest bridge in Australia; fair dinkum.

Talking about things that are big, one of my readers took exception to my statement that our mozzies are big. So I thought that I had better clarify the position. You see, when we were working on what was left of the mast that was attached to the **biggest** tx in the State, the mozzies were a trifle troublesome. Not through their propensity for biting, we soon fixed that with various goos, but when one is stumbling through the dark with an armful of sundry radio bits and pieces, it is annoying when one falls over a mozzie. All right, so they weren't all that big, some of them only caused us to stub our toes. But when a mozzie has a small bag containing disinfectant, and a hypo needle with local anaesthetic, to prepare the victim for his (the mozzie's) proboscis, well, they're big.

Graham 4DG, who has for some time now, been signing 9DG, is back in Queensland and is having some difficulty in remembering how to tune his rig. It did have a bit of jumpiness about it Graham, but when its owner has just returned from the land of headhunters, etc., can you blame it?

I just received the latest "A.R." and I read that PanSy is girding his loins, to "do over" yours truly. Well PanSy old boy (the "old" is purely in an affectionate manner), I did have a shot at you a few issues ago, but I'm afraid you must have friends in high places, or else they are firm believers in "the pen is mightier than the sword" because it was deleted, censured, left out. As a matter of fact, the chap who warned you, was fully aware of what I had sent down and was highly delighted, but as I have mentioned, you must have friends . . . Still, never mind, I mignt be able to sneak one across ye Ed when he can't find his red pencil. I was thinking of you a few days ago PanSy, and believe me, it was a sympathetic mood I was in. I went in to the Post Office to pay my quid and I thought: "Poor old PanSy, living in that backward State, having to race around and practically plead with sundry bods to take his quid." And now I read that his troubles are all over. Fair dinkum, it makes one lose all faith in human nature.

Stan 4SA is in hospital and expects to be thrown out any time. The nurses there must not have heard of gags. George 4GG and Stan 4ST are going to Urunga for the Easter Convention. Not sure whether they will be taking mobile gear with them.

The Convention that was held at Alexandria Headlands was a huge success. Over 80 registered and some nice prizes were taken off. 4ZAX won the fox hunt. Vince 4VJ took off the mobile event, and a North Queenslander (you can't keep them down) took off the prize for the longest distance covered. I don't know who it was, except that it was a Z call. Fred Cox, from Gympie, represented his club. The auction sale was ably handled by 4VB and a W.I.C.E.N. exercise was demonstrated by Vince 4VJ. George 4GG won the award for the most contacts at the Convention, with a total of 15. All in all, everybody enjoyed themselves and are looking forward to next year's Convention.

Not much activity in this area, apart from the Youth Radio Club, which got off to a good start and looks like being a huge success.

Well blokes, I can't print news if I don't get it, so how about it? If you want to send it down to ye Ed yourself, do so by all means, but send me a copy so as I won't repeat it. "D" day for news is so as it will reach me by the end of the month.

Breathes there a spy, with soul so dead,
Who never to himself has said,
I'd better send news of the local Tribe,
To Uncle Xray, the Queensland Scribe.
Remember my threat when I accepted this job
If I don't get news, my best friend I'll "dob".

—Cheers, Uncle Xray.

WIDE BAY AND BURNETT BRANCH, W.I.A.

Well chaps here we are again, and as the walrus said to talk of many things, he must have been referring to PanSy, as there is not much news from this end of the band this month.

I am feeling all washed out as we have had three floods in the last three months and it is affecting some of the boys in the locality, as they are growing webbed feet and are going in for duck talk. Barry 4LN with the cooperation and help of Harry 4ZHG should be on the air any day now, imitating Donald Duck, that is as soon as he chases a few more gremlins out of the gear, and we will soon have to decipher the double Dutch that will emanate from Harry's (4ZHG) rotary clothes line.

Went down to the W.I.A. Convention, which was held at Alexandra Headlands recently. Only managed to make it for the last day. It was a very good "do", about 80 booked in. Moving around the crowd I noticed a number of the boys from the W.B. & B. Branch present. Max 4HD, the 6 mx king from Buderim; John 4PU from Woombye, Les 4ZBS from Yandina, and Associate Garry Franks and Ken Chiverton from Nambour, Bill Stubbins, Bob Spotswood and son Steve (who on account of height looks down on his Dad) from Bundaberg. Sounds like a high society report. Alf 4AO conducted the W.I.A. hook-up from the location and had a good response. Went out as penciller for Brian 4UW in the 40 mx scramble, or is it a mad scramble, when everybody calls everybody else for the first few minutes and then gradually peters out to silence.

Tom 4KB, whose identification disc states that his "interest" is "loafing", made the distribution of prizes. I remember one or two. Ken Chiverton received a "gong" for the best piece of home-constructed equipment, and a meter for the best time in the blindfold hunt, 1 min. 45 sec.; what odds am I offered. Prize for person coming furthest distance went to John 4ZJM who lives at Cairns. Freddie 4VB was the auctioneer at the sale of disposals equipment, and none of the boys were game to blink an eye lid lest they have some piece of gear knocked down to them. Altogether, as Jimmy 4HZ would say, "a good time was had by all". Some shots of the boys in action was later put over t.v. Good publicity for Ham Radio.

Chips 4XR has started his A.O.C.P. class, so they will soon have to revise the Call Sign Book and the same goes for the Bundaberg boys as Jim Hazzard, Lee Downing, Arch Lewis, Roy Spotswood and Bill Stebbens have passed their exam., and next week three more are going to have a shot at the papers for their ticket, and several doing telegraphy only to make up the full licence. Recently Bill 4SW (Maryborough) went to Kingaroy (where the peanuts come from) to see the air pageant and was especially interested in the gliders. Must be thinking of acquiring one, loading some portable gear aboard and going aloft to work himself some good DX. It is an idea. 73, Fred Cox.

— . . . —

SOUTH AUSTRALIA

Warwick ParSons has gone on leave, and is sadly missed—by me, if no one else! His tour this year took in Victoria as far east as Warrnambool, back along the coast road, up to the Murray Valley and then to Oakbank for Easter, as usual. I heard that Mr. Pincott had been registering a new firearm, but PanSy assures me that that was not the reason for the about-face at Warrnambool.

Bram 5AB is preparing for a DX-pedition to Willis Island. He has been granted permission to go out in the relief boat S.S. Cape Leeuwin which sails from Cairns on 15th June. Operations should start on or about 18th June. More information on this in next month's issue, **providing Bram keeps us posted.** He is also preparing preliminary plans for an assault on the Portuguese enclave Ocussi on Timor if the A.R.R.L. will give him country status. If it comes off he should have a whale of a time being DX, instead of working it! Incidentally, if anyone has a small portable a.c. generator suitable to take to Willis Island, Bram is quite prepared to buy it. Drop him a line. Bram asked me whether PanSy had a QSL manager for his DX-pedition to Oakbank at Easter, and whether the A.R.R.L. had granted him country status. Dunno.

Gordon 5XU is another VK5 who is going overseas. Late in May he is going Stateside—not as a teacher, but as a student. Hope that the lecturer gives him six of the best when and where necessary, to keep him in order.

On 12th May, 1913, two lads got their Amateur call signs, XVS and XVT. Both are still active as Arthur Cotton, VK5HY, and Chas. Othen, VK5ON. Two years ago they had their first contact for 47 years, but both are now active on s.s.b. If you work 'em, you're talking to history! Charlie reports that his first tx consisted of a 1 inch spark coil, rotary gap (motor from an old fan), helix made of 3/16 inch copper tubing, and the condenser was made from old photo plates and sheet zinc. The rx tuning coil was wound on cardboard tubing, condenser made of brass tubing. The rest of the rx consisted of a galena detector and a phone which he acquired from a source which he declines to name. Maybe I'm dumb, but I can't see why they couldn't have gone out and bought some s.s.b. gear—maybe the low wages in those days had something to do with it! Frequency was approx. 110 metres, plus or minus 50 per cent., and the power—90 watts.

Roy Cook, 5AC, has also been on for 50 years. I believe he got his call sign XVN before Charlie and Arthur. He's not very active on the air at present, but his gear is ready to go at any time.

Col 5CJ, the South Eastern end of the grape vine, reports that Stuart 5MS is building a new linear amp. for his sideband rig and Erg 5KU is looking for dural to make a new beam. At present his two element job is on the ground. Leo 5GJ hasn't been heard for some time. His new tower is at a standstil. Maybe he's busy! Claude 5CH hasn't been heard by my spy for quite a while, but then Col doesn't spend all his time listening. Ron 5VH is still waiting to shift into his new house. He has plans for a miniature tx and rx which can be hidden in the corner of the lounge. Col is on 40 at lunchtime and 2 at 0630 for skeds. I wouldn't mind the lunch-time efforts, but—is there such an hour as 0630? Brrr.

Tom 5AQ, from the other end of the State, Port Augusta, which town is usually known as the Big Smoke, writes to say that the 14 Mc. re-broadcast of 5WI on Sunday mornings is rather a flop. He does it, and he should know! On call back after the session all he hears is QRN now that 8AV is 5AV again. Ron 5AP has one end of his antenna on the ground—white ants are suspected. Graham 5GE, who spends his working life on the air, spends his spare time otherwise, and Ron 5AV —having the job of settling into a new house —is inactive. Tom, having the true Ham spirit, hopes that he stays that way as Ron's new QTH is no more than 60 yards from Tom's almost completed new house. Doug Pannel, also of the Big Smoke, has gained his A.O.C.P. and is working like nobody's business to be ready to go on the air when his licence and call sign turn up. Congrats. Doug. When PanSy comes back he'll doubtless give you the usual advice—DX before dishes!

Warwick, Tom wants you to have a good holiday, because only s.s.b. stations work the DX on 7 Mc.

Nothing to do with the above, of course, but rumour (the lying jade) has it that a certain gentleman—no, he's a Ham—a certain person whose girth is roughly equivalent to his height, has been spending many easily earned shekels on **sideband** bits and pieces. Certain members—no names, no packdrill—have been casting nasturtiums about the ability of the nameless one to get the gear going. In fact, one wrote to me in the following terms, "I think . . . must have bought a phasing unit too, and **can't get it to go.**" No more at present, but when the s.s.b. gang start running for cover, watch out for a change in the tune. Don't ask me who the traitor is—I'd be ashamed to be the one to put his weight up.

While on the subject of weights, the XYLs present at the Xmas "Do" would like to take the opportunity to reciprocate 5PS' blissfully happy wishes that their shadows may never grow less, and they cheerfully hope that not only his mind will continue to broaden with the passing years . . .

Met Ralph 5TR (Texas Rattlesnakes of old). He is a convert to sideband and tells me he's worked over 1,000 DX stations in the last three months.

From various sources I've heard that Pete 5FM has been having trouble with toothpaste tube caps. Can't even tell the difference between a cap and a cockroach (or was it a henroach?). If you want to know the full story, ask Pete. If I wrote it, no one would believe me.

Tom 5TL, of Renmark, has had old age catch up on him. Not so much on himself as on his gear. The last time I spoke to Tom he was creaking at the joints, but he tells me that his gear was really suffering from arthritis—dry joints everywhere. However, one by one those joints were dampened, and he's back on the breeze with his usual solid signal.

5BC, in addition to his daily round, plus his Amateur activities, has found time to acquire and use a boat. Not quite in the 5LK category, but big enough to fish from in smooth waters. Nobody knows whether he has caught anything, but my Renmark spy tells me he has plenty of bait. Knowing Renmark, I wonder whether that will help his fishing or not. Anyway, DX before fishing—remember?

VK5 members are reminded that it is now some years since they received a notice that the annual fee is due. If you read your journal you'll find a notice regarding annual fees. Anyway, why wait for the journal—you know that your sub. is due at the end of February. Why not pay it then?

After the election at the March meeting, the following officers of this Division were appointed by Council:

President, P. M. Williams; 1st Vice-Pres., G. M. Taylor; 2nd Vice-Pres., C. Pearson; Sec., P. O'Connor; Treas., D. Cooper; Minute Sec., C. Pearson; Operator of 5WI, C. Pearson; Programme Organiser, R. Gurr; Membership Organiser and Associates' Rep., L. Cotton; Publicity Officer, etc., W. W. Parsons; V.h.f. Rep., G. Wilde; Fed. Councillor, G. M. Taylor; Technical Advisory Committee, 5PU, 5KX, 5EU, 5ZGY, 5ZJM.

The latest news from the Brompton Boys' Radio Club (5BA) is that its new tx has been completed and as soon as the new aerial is aloft they should be in business again. 5GU, 5HY, 5RR and 5JT helped Joe 5JO with the rig. Len 5ZF is also very popular at the club as he modified a b.c. rx for them. Made a nice job of it too. Joe 5JO tells me that if any of the local gang would like to help with repairing gear, they'd be very welcome. The club meets on alternate Fridays from 7 to 9 p.m.

Fred 5FH is now at his new QTH and is putting out his usual solid signal—c.w. only. He's got more room for aerials now than he ever had.

That's all for this month. Back to normal next month with Warwick as scribe. 73, 5CA. (Peace once a year—Ye Thankful Ed.)

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TASMANIA

NORTH WEST ZONE

Well fellows, winter is fast approaching and will no doubt provide us with more time indoors to catch up on the numerous projects we put off during the fine weather. Winter also means more t.v. viewing by the general populace, so it would seem good insurance to check those harmonic suppressors. Let us hope we don't have the bigoted neighbours Athol has. It's a bit rugged causing t.v.i. with the rig switched off! Both Associates, Basil and Ray are hard at it on rx, ready for when they get their tickets.

The zone meetings have been well attended of late. We now have several new members who attend consistently, and are studying for the A.O.C.P. Along with these newer chaps is a hard core of older members, all of whom pull their weight—all of which is most gratifying.

Our biggest problem at present is money. Numerous unique means of raisilng it (both legal and illegal) were discussed last meeting, but no final solution was agreed upon. We may have to appeal to HQ as is our constitutional right, if necessary!

Sid 7SF got two chickens from them at the annual meeting. To alleviate expenses, Ray and David 7MS may have a new venue for the business meetings and we may hold social meetings in private homes. More of this anon.

The tx hunt held in the Ulverstone district in March was a huge success. This was due in no small way to the enthusiastic group of Northern Zone people who turned up. Three runs were made, the respective winners were 7XL, J. Gelston, and 7DK. Another day along similar lines is projected for next summer at Port Sorell.

By the time you read these notes I should be somewhere on the Pacific for two weeks' cruise, so the scribe for next month will be that terrible man, 7MX. 73, 7ZBH.

NORTHERN ZONE

The Northern Zone has commenced yet another year of activity, with a new complement of officers being elected at the Annual General Meeting held in March.

The principal officers elected were Pres., Den 7DK; Sec., Ray 7ZRJ; Treas., Peter 7PF; and we are looking forward with keen anticipation to another year of interesting activities both technical and social.

Looking back over the President's report for last year, it is pleasing to see that four of our associate members have been successful in passing their L.A.O.C.P. examinations. Ted 7ZBB and Graham Ranft, Bob Grant and Chris Barnard who are still waiting for their call signs. It looks as though the v.h.f. bands will be well populated in the northern area this year, especially with the guiding hands of those regular oldtimers to the bands, Len 7BQ, Col 7LZ, Den 7DK and Peter 7PF. Col and Peter have been doing a lot of experimental work over the last two months with a 2 mx portable tx/rx, and they are both operating mobile at the moment with very good signals. When the teething troubles are sorted out and a standard design adopted, it is hoped to start tx hunts again on both 2 and 80 mx. This brought forth quite considerable comment last meeting and one member was overheard planning a three element beam for the back of a motor cycle.

Some of the Northern Zone members attended the Field Day run by the North-West boys, and both Den 7DK and Joe Gelston were successful in the tx hunts, both taking major placings, although Den was rather hesitant to accost David 7MS in a town park; David was suitably disguised as a young lady wheeling a pram which contained the hidden gear—a very good day's outing from all accounts.

The Tasmanian Division held their Annual General Meeting and Dinner in Hobart on 23rd March, run by the Southern Zone, and a very fine job they did too! All credit must go to those who organised this annual gathering as it went off perfectly. There were over a hundred present, and revelry extended till the small hours, and Jack 7JB still managed to do his usual fine job next morning, running the 7WI broadcast!

The necessary arrangements are under way for the Northern Zone to obtain its own call sign and it is hoped shortly to be able to conduct our own regular net, both on v.h.f. and h.f. bands, so keep a sharp look out on the bands, you other zones, for 7NZ and help us stimulate even more interest in Tasmania in the workings of Amateur Radio.

Activity among the Zone members, although not spectacular, has been consistently steady and probably the most newsworthy item is that Ray 7ZRJ at long last has his rig on the air and putting out a very nice signal by all reports. Rumour has it that he has also worked through to 7ZAY in Hobart (almost!). Mark 7CA is now heard regularly on 80 mx on Sunday mornings for the 7WI broadcast and round up. Nice to hear you Max, bolstering the ranks of the Northern Zone. Ted 7EC is still pounding his c.w. on 20 and 40, and the QSLs are arriving his way and prove his point that there's plenty to be had on these bands.

Ted 7ZBB has been on 2 mx, but by all reports spends most of his time making oscillators. He only wishes that he could mix like he could oscillate! Den 7DK is always to be heard somewhere on the bands and is going to make more noise than ever when his new 2 mx and 6 mx tx is finished. John 7JF has been quieter than usual, but promises to be more active than ever when his new rig is finished.

Just in case some of our members may have missed the broadcasts and bulletins, our new meeting place is 102 Charles St., Launceston, second Friday each month; the rooms are large, so we will be pleased to see you. 73, Johnny Fox.

WANTED Urgently: A Sub-Editor to compile the DX page for "A.R." Fuller details obtainable from Editor "A.R." or Alan Shawsmith, VK4SS.

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Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. **Copy** must be received at **P.O. Box 36, East Melbourne, C.2, Vic., by 8th of the month**, and **remittance should accompany** the advertisement. Call signs are now permitted in Hamads. Dealers' advertisements not accepted in this column.

FOR SALE: BC348 double conversion to 455 Kc. Sensitive and selective, £36/10/0. Wanted, one Bug Key,, will swap brand new 813 or other gear for same. VK3WW, 3 Maxwell St., Lalor, Melb., Vic.

FOR SALE: Swan 120 Transceiver, 3 months old in original etzrafoam packing, new condition, owner going overseas. Band switched 14.1 to 14.25 and 14.2 to 14.35 Mc. Can be simply modified for 40 and 80 metre bands. 25 watts radiated a.m. and 250 watts p.e.p. s.s.b. Xtal lattice filter, good stability, world wide DX coverage, mobile or base. Instruction manual. Power supply if required. Price £160 cash. A. G. Swinton, VK2AAK, P.O. Box 1, Kulnura, N.S.W.

GENUINE Bargains sent by return. Taylor 47A Valve and Circuit Tester, excellent condition, £20. A.W.A. A.C. Mantel Radio, recent model, £4. Pye A.C. or Battery Portable, £3. Philips A.C. or Battery Portable, £4. 15 H., 175 mA., Choke, £1. Trannies: 385-0-385v. 80 mA., 325-0-325v. 60 mA., 230v. primaries, 12/6 ea. 2 x 10 volt at 10 amp. secondary, 25/-. 6-12 volt 4 amp. Metal Rectifier, 25/-. 12 volt ditto, 15/-. 1TK Transistor Signal Injector, 25/-. New Tubes: 2 x 815, 2 x 83, 3 x 717A, 6AN7, etc., £3 the lot. VK6RE, 10 Craddock Road, Merredin, W.A.

SELL: Heavy duty 46 ft. tower complete with head bearing. Top 7 feet 1¾" x 3/16" angle, remainder 2½" x ¼" angle. Triangular base, 12 ft. 3 in. Prop. Pitch Motor and Transformer to suit. Easily shipped. £65 the lot. F. A. Eastick, Alice Springs, N.T.

SELL: Red Line 30w. Modulation Transformer, £2. Similar 400v. 150 mA. Power Transformer and Choke £5 included. E. Blackmore, 10a Holloway St., Carnegie, Vic. VK3TG, Phone 58-2679.

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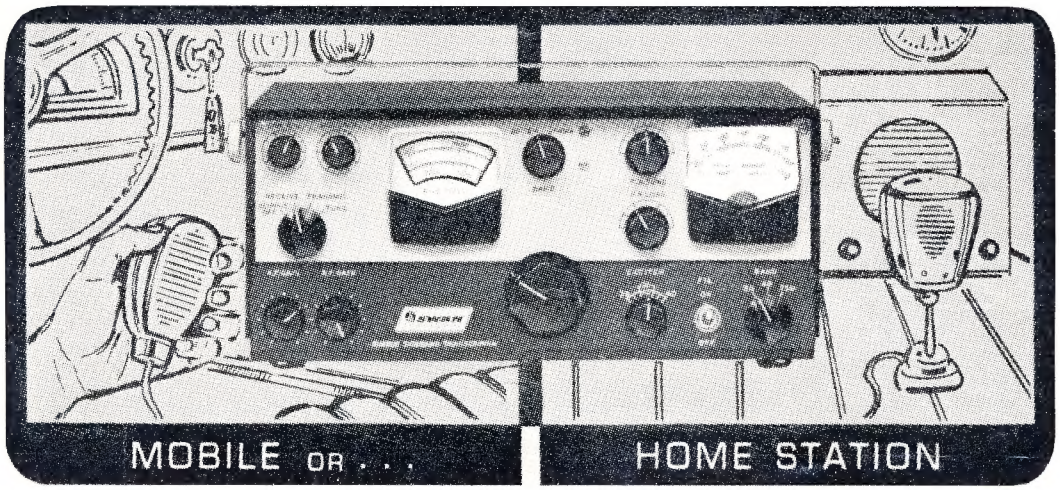

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Frequency Range: 3500-3700 Kc., 7000-7150 Kc., and 14100-14350 Kc.

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Total of 15 tubes, including 6DQ5 p.a. 12BY7A driver, 12BE6 trans. mixer, 12AU6 v.f.o., 6BA6 rec. r.f., 12BE6 rec. mixer, 6BZ6 1st i.f., 6BA6 2nd i.f., 7360 bal. mod., 12AX7 prod. det.-1st rec. a.f., 6V6GTA output a.f., 6U8A carrier osc., 12AU7 mic. gain, 6AL5 a.g.c. rect., OD3 volt. reg.

Meter: 0-400 mA., illuminated.

Mechanical: All aluminium construction, 5½" high, 13" wide, 11" deep. Weight: 11¾ lbs.

Shipping weight: 13½ lbs.., including mobile mounting bracket and hardware. Each set is shipped in a specially designed polystyrene container.

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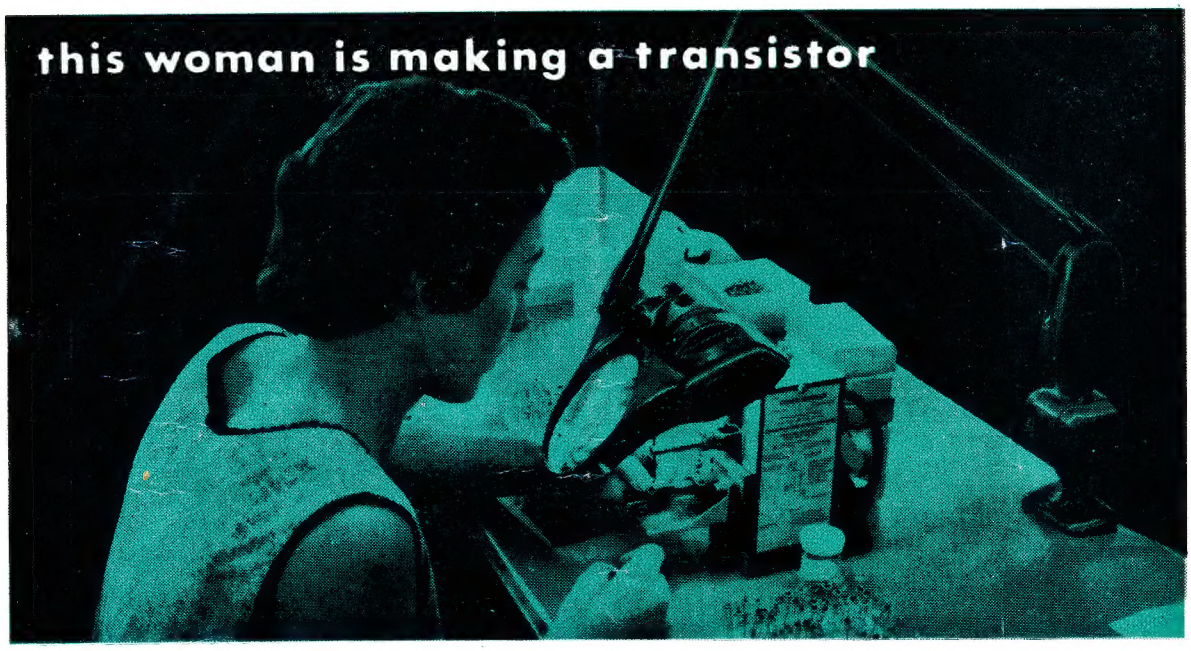

Seen above: "Base tab assembly spot welding", one of the mid stages of AWV transistor manufacture.

Pictured below: A technician from the Commonwealth Acoustic Laboratories positions an AWV transistor in one of the free Government hearing aids.

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